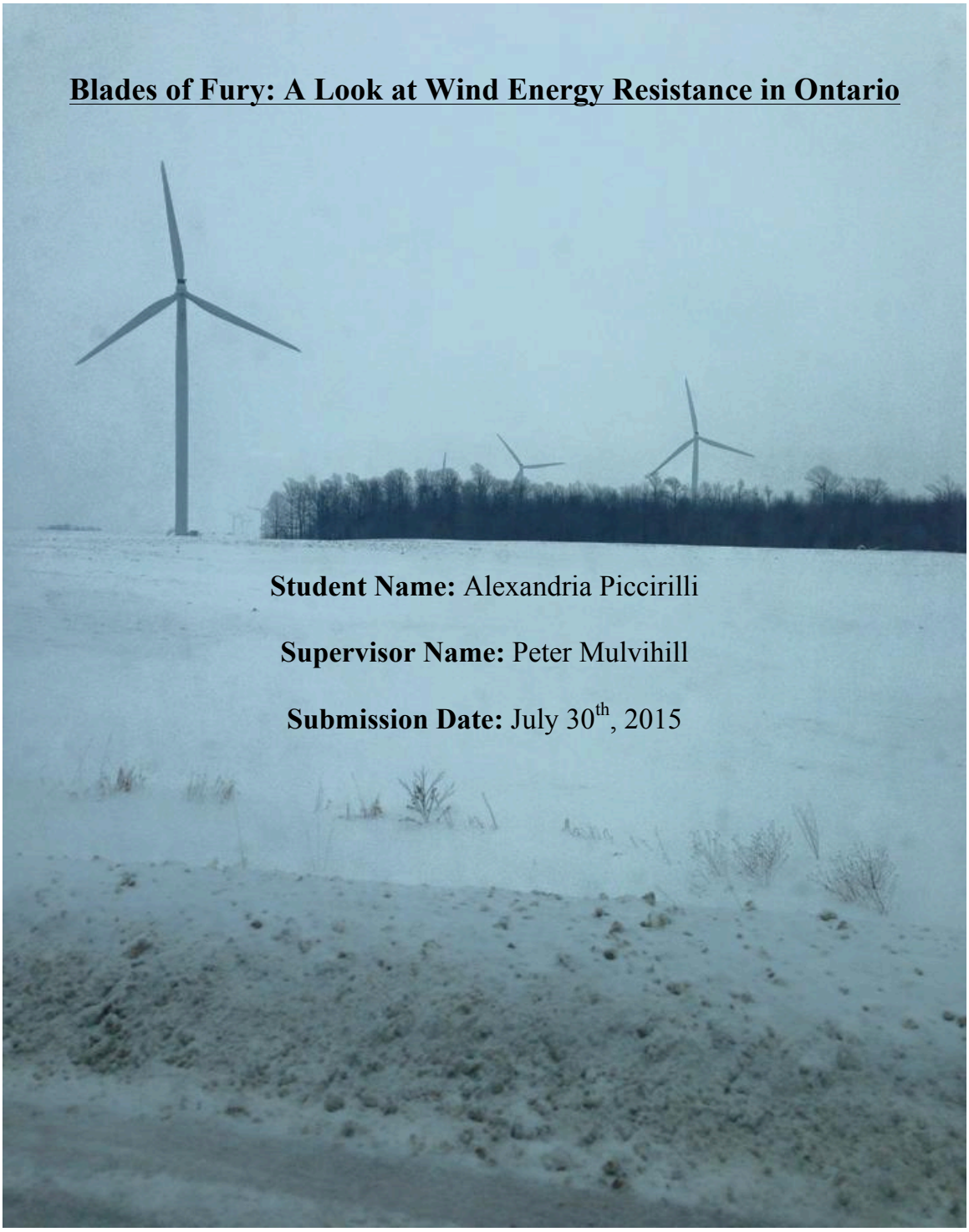
Blades of Fury: A Look at Wind Energy Resistance in Ontario



Student Name: Alexandria Piccirilli

Supervisor Name: Peter Mulvihill

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Student Signature: _____

Supervisor Signature: _____

Abstract

Anthropogenic activities are causing unequivocal and persistent climatic alterations. Wind energy and other alternative energy forms can minimize harmful emissions and provide sustainable solutions to climate change. Despite environmental benefits, public backlash and implementation issues impede wind energy. The development of wind energy in Ontario is substantially impacted by public perception of the technology.

This paper explores the social barriers to the widespread adoption of wind energy in the province as identified by residents in two rural communities – Prince Edward County and Kincardine. Forty-one residents in close proximity to the Armow Wind and the White Pines Wind projects were asked to describe their experiences with project planning and identify grievances. Human health, noise concerns, property value, and aesthetic disruption are primary concerns for residents, which is consistent with findings presented in the academic literature.

Public perception plays an integral role in project development. Wind energy in Ontario faces significant resistance from community inhabitants near wind farm developments. This paper also examines how public participation in energy planning shapes residential wind energy perceptions. An in-depth examination of the participatory processes in both regions demonstrates that increased public involvement can positively shape wind energy attitudes. Public involvement strategies must be re-evaluated to reconcile community-proponent tensions and maximize resident decision-making power. Some residents in Kincardine and Prince Edward County are willing to re-evaluate their stance on wind energy projects with more active engagement in planning.

These research findings also demonstrate how strained relationships between local communities and the provincial government can impact wind development. An inherent distrust

of the provincial government and project planners exists in both study locations. This distrust leads to public unwillingness to accept government-issued wind energy information, shapes wind energy attitudes, and perpetuates misconceptions.

Foreword

This major paper is being submitted to partially fulfill MES degree requirements. The research involved in the composition of this major paper relates to my area of concentration, components, and fulfills a number of learning objectives outlined in my Plan of Study. This research contributes to my understanding of the major social barriers to implementing renewable energy systems in Ontario (Learning Objective 1.1.). It also explores the role of public involvement in energy planning and how public opposition to wind turbines and wind farms in Ontario can impact project outcomes and development (Learning Objective 1.2). Additionally, completing this paper required investigation into the operation of wind farms and the technical aspects of wind turbines, which aligns with Learning Objective 1.3 in my Plan of Study. Finally, because wind energy is an alternative to climate change-inducing conventional energy sources, research on global climate change science was conducted in preparation of this report. This research aligns with Learning Objective 2.1 in my Plan of Study.

Acknowledgements

I would like to thank my parents, Stefano, and Domenic for providing me with unconditional support in the pursuit of my ambitions. I would also like to thank and acknowledge my Supervisor Peter Mulvihill and my Advisor Felipe Montoya for their advice and encouragement throughout the MES Program.

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1.0. Introduction

Unequivocal and persistent climatic alterations are the product of debilitating anthropogenic activities. Fossil fuel combustion from conventional electricity produces greenhouse gas emissions with destructive effects on earth systems (Treut et al., 2007). Concentrations of primary greenhouse gases including carbon dioxide, methane, halocarbons, and nitrous oxide have increased markedly as a result of human activities from the industrial era in the mid-1700s (Treut et al., 2007). Alternative energy forms that minimize harmful emissions are often regarded as sustainable solutions to global energy insecurity and climate change. Despite the environmental benefits associated with renewable energy technologies such as wind, solar and geothermal, these electricity systems face a multitude of implementation issues. Financial, technical, political and social barriers hinder the widespread adoption of these technologies, and strengthen public reliance on conventional sources of electricity. While issues of technology and financing are significant hindrances, they may be overcome through increased subsidization and technical advancements. Public sentiments regarding renewable energy projects, however, can significantly impact their development, and in many cases are increasingly difficult to overcome.

Wind energy faces intense public scrutiny, especially when compared to other less controversial sources of energy. Ontario's wind resistance movement has gained momentum in the last decade, with the increased development of wind farms in the province. This research study aims to identify major wind energy issues in two Ontario communities, outline the factors shaping project perception, and analyze how public involvement processes can impact public views.

Numerous publications explore renewable energy systems in Ontario, however, in-depth examinations into the social barriers of wind farms in rural communities have not been

conducted. Social perception of energy systems as well as citizen participation in energy planning can meaningfully influence project development. This study will supplement gaps in existing academic literature on wind energy NIMBY-ism in Ontario. Findings from two wind developments in Kincardine and Prince Edward County will be outlined and analyzed.

2.0 Background

2.1 Barriers to Renewable Energy in Ontario

Renewable energy systems in Ontario face a number of economic, social and technological impediments. Renewables are impeded by a techno-institutional lock, which refers to systemic implementation barriers derived from long-standing energy technology systems (Etcheverry, O'Malley, & Taylor, 2009). Long-established electricity paradigms in Ontario hinder the implementation of favourable renewable energy policies. Furthermore, path dependency fosters a political environment resistant to change. Unchanging electricity systems create urban planning difficulties rooted in the disinclination to alter existing energy operations (Etcheverry, O'Malley, & Taylor, 2009). As a centralized approach to energy prevails in Ontario, opportunities to incorporate sustainable and distributed energy systems are greatly reduced (Fraser, 2009). Because of unchanging traditional systems, consumers begin associating renewables with high costs, unreliability, and intermittency (Fraser, 2009). Understanding how to best implement wind energy systems, first involves identifying the barriers associated with all renewable systems.

Financial Barriers

Renewable energy projects often require steep initial investments. These up-front costs include core system costs as well as incidental costs to cover audits, renovations and applications (Etcheverry, O'Malley, & Taylor, 2009). High initial costs are coupled with inadequate financing systems. Ontario lacks sufficient consumer rebate and incentive programs available to

supplement costs of these technologies.

The cost analysis for renewable energy systems in Ontario is also skewed. Government subsidization of conventional energy sources incentivizes fossil fuel investment and consumption (Fraser, 2009). Consumer overestimation of the cost-effectiveness of fossil fuels, hydro, and nuclear energy in the province works against renewable energy implementation. Accurate environmental and financial life cycle assessments for renewable technologies have not been completed, which results in the inflation of costs (Fraser, 2009). Furthermore, governmental support of conventional electricity exacerbates these price overestimations. Overcoming these financial barriers is essential to increasing the feasibility of widespread renewable applications in the province.

Political Barriers

To enhance the integration of renewable energy systems, Ontario's parliament passed the *Green Energy Act* in 2009 (CanSIA, 2011). A few primary objectives outlined in the Green Energy Act pertaining to renewable energy systems include, increasing sector growth and creating approximately 50 000 green jobs (CanSIA, 2011). Despite the intentions of the GEA with respect to sustainable energy, it has increased social opposition to renewables in some regions. A renewable energy project is entitled to a special legal designation from the provincial government that enables development irrespective of municipal bylaws or other encumbrances (GEA, 2009). The GEA thus prevents local communities and their elected municipal representatives from affecting provincially sanctioned development. Municipal officials cannot effectively challenge renewable energy projects that enjoy the GEA designation. This can foster opposition to renewables from municipalities and their inhabitants, who feel powerless about development decisions in their communities.

In addition to the aforementioned GEA issues, provincial policy also contributes to wind development opposition. In 2011, the Ontario government established a moratorium on offshore wind energy to conduct a scientific investigation on the effects of turbines in coastal areas (Spears, 2013). In a 2013 interview, Energy Minister Chiarelli indicated that offshore wind is relatively un-established in Ontario warranting further examination into its potential effects (Reeves, 2013). During the four years since the moratorium was first imposed, the Ministry of Energy has not provided any updates about the status of offshore applications, and policies regarding offshore developments remain uncertain. These actions by the provincial government display the ease through which uncertain policy can indefinitely delay renewable energy projects. Re-evaluation of these aforementioned political constraints is vital to expanding renewable energy in the province.

Social Barriers

Etcheverry, O' Malley, and Taylor (2009) identify the major social barriers to renewable energy including gaps in consumer knowledge, path dependency (unwillingness to diverge from traditional energy), and public opposition. Painuly (2001) also distinguishes barriers related to public acceptance of renewable energy technologies (RETs) including: aversion to change, lack of product awareness, aesthetic concerns, proclivity for traditional energy sources, and the absence of local participation. Etcheverry et al. (2009) outline concerns expressed by Ontario residents, whereas Painuly's (2001) broad research has global applications.

Insufficient consumer knowledge and misinformation also work against these projects. An incomplete understanding of the potential benefits of renewable energy exists in the province. Consumers are often unaware of the potential employment opportunities associated with these energies (Fraser, 2009). Additionally, consumers often lack sufficient understanding of the

capabilities of hybrid renewable energy systems, such as combined heat and power (Fraser, 2009) and disregard the potential environmental advantages such as carbon emission reductions (Pembina, n.d.). Mechanisms to bridge gaps in consumer knowledge require further development.

2.2 Wind Energy NIMBY-ism

Public perception plays an integral role in project development. Wind energy in Ontario faces significant public resistance from local communities near wind farm developments. Devine-Wright (2005), Knopper and Ollson (2011), Krohn and Damborg (1999), and Hill and Knott (2010) discuss how local-scale perception of wind technologies can impede project development. Negative public attitudes have birthed various anti-development movements. The NIMBY (not in my backyard) movement characterizes public opposition to novel developments. NIMBY-ism is the product of an individual's background and socioeconomic status (Devine-Wright, 2005). NIMBY proponents disapprove of local wind installations and often petition for project cessation. These wind energy "nay-sayers" (disapproving individuals) typically believe that wind energy is expensive, noisy, aesthetically unappealing, unreliable, and unable to solve energy crises (Krohn & Damborg, 1999). Ontario residents who disapprove of wind farms list aesthetics, noise, ecological risks (bird safety) and property values as top concerns (Hill & Knott, 2010).

Devine-Wright (2005) argues that NIMBY-ism is related to the "physical proximity" hypothesis – the idea that attitudes are shaped by an individual's propinquity to a technology. Based on this hypothesis, individuals residing near wind farms may be more concerned with how turbines will affect their physical well-being, mental-health, and property value than other residents are (Devine-Wright, 2005). Knopper and Ollson (2011) posit that although this

hypothesis is supported in the popular literature, it is contested in the peer-reviewed literature. Devine-Wright's (2005) trends may be over-generalized as they were formulated based on opinion polls and case studies. Additionally, Knopper and Ollson's (2011) discussion of wind turbine annoyance factors conclude that visual and noise impacts shape public attitudes towards these technologies.

Pedersen, Hallberg, and Waye (2007) also explore how the public perceives wind turbines. Their findings parallel Devine-Wright's (2005) indicating that perception is largely influenced by an individual's personal values. Pedersen et al. (2007) also identify that turbine noise and blade movement are among the top concerns for residents, although this varied in their study area. Deignan, Harvey, and Hoffman-Goetz (2013) provide an Ontario-based perspective on how wind perception is influenced by media reports. The researchers reviewed newspaper coverage of perceived turbine health effects and how this informed public attitudes in five communities (Deignan et al. 2013). Deignan et al. (2013) discovered that local newspapers are more likely to use "fright factors" when describing new wind farms than national papers. These "fright factors" contributed to greater public anxiety in local communities (Deignan et al., 2013). These findings hint that wind perception divergence exists between local communities and the broader public. In this major paper, I aim to explore if the findings presented by the aforementioned scholars hold true for two Ontario communities.

Wind energy NIMBY-ism is deeply rooted in Ontario's energy sector. The moratorium established in 2011 was the product of intense public opposition to offshore wind development at the Scarborough Bluffs. In 2008, rumblings of the establishment of offshore turbines in the Scarborough Bluffs area resulted in unexpected public backlash prior to the release of any formal proposals (Mehler Paperny, 2010). These actions display the depth of the opposition to wind

energy. Opponents of wind demonstrated their ability to galvanize the population and push municipalities to adopt a stringent anti-wind stance. The organizational force of NIMBY activists proved to be compelling even to the provincial government, who answered the anti-wind call by issuing a comprehensive moratorium on offshore wind development. The public pressure mounted by the NIMBY movement proved to be formidable. It is important to note that 2011 was an election year in Ontario, which possibly influenced the provincial government's decision to establish the moratorium and acquiesce to NIMBY-ism.

2.3. Public Participation in Wind Energy Planning

The degree to which residents are informed of wind energy project details, and participate in project planning, can significantly shape wind energy attitudes. Public participation activities can occur at various stages of the development process. Activities can begin from the earliest stages of project conception, whereby planners alert local communities of new proposals, and continue throughout the entire duration of the project.

A ladder of citizen participation is often used to describe levels of public involvement ranging from nonparticipation (lowest levels) to degrees of citizen power (highest levels) (Arnstein, 1969). The highest levels of participation include cooperation between stakeholders, shared decision-making power, and citizen control (Arnstein, 1969). Effective participation is beneficial for all stakeholders. By conducting fair participatory processes, proponents receive valuable local knowledge, gain public trust, and can quash disputes in early project stages minimizing development delays (UNEP, 2002). Effective participation also establishes a forum for residential concerns, presents a learning opportunity for citizens, and provides affected residents with decision-making power (UNEP, 2002).

Despite its benefits, effective participation is not always employed. Arnstein (1969)

indicates that public participation can sometimes be tokenistic and only conducted to fulfill consultation obligations. Rod (2011) argues that Canadian wind projects are criticized for conducting tokenistic participatory practices because the public is often involved too late in the process and are given limited (if any) decision-making power. Pedersen et al.'s (2007) wind study also reveals that many residents were concerned about environmental injustice and limited influence in decision-making.

Wright (2012) indicates that greater public participation can positively affect wind energy project acceptance in Canada. This paper aims to investigate if this holds true for residents in Kincardine and Prince Edward County, and what implications this may have on wind acceptance in Ontario.

2.4. Wind Projects in Focus

There are many wind energy project sites in Ontario. Two sites in Kincardine and Prince Edward County were selected. An investigation into public wind energy concerns and citizen participation occurred in both regions. A brief description of the highlighted projects will be provided below.

2.4.1. Armow Wind Project

The Armow Wind Project is a joint venture to develop a 180 Megawatt wind generation facility in Kincardine (Samsung & Pattern, 2012). The organizations involved in the venture are Samsung Renewable Energy and Pattern Energy Group, operating as SP Armow Wind Ontario LP (Samsung & Pattern, 2012). The developers leased 46 000 acres of private land for the project and procured 91 wind turbines (Armow Wind, 2015a). The project area is predominantly comprised of agricultural lands, with some riparian and forested areas (Samsung & Pattern, 2012). Construction of the wind facility will last between twelve and eighteen months (Armow

Wind, 2015a). Once operational, the wind farm will power approximately 70 000 Ontario homes (Armow Wind, 2015a). The facility has an estimated operational life of 20 years (Armow Wind, 2015a).

The project was proposed in August 2011 (Armow Wind, 2015a). During this time, Armow conducted a number of environmental consultation site visits (Armow Wind, 2015a). The initial project timeline, which includes proposal, consultation, construction and operation deadlines, can be viewed in Table 1.

Kincardine, the wind development site, is a municipality located in Bruce County. The wind facility is located on the eastern shore of Lake Huron. Bordering municipalities include Tiverton in the North, Goderich in the south, and Walkerton in the East. Figure 1 provides a snapshot of the general project boundaries and proximity to neighbouring municipalities. The Armow Wind Project is another substantial energy project in the Bruce County region, which is also home to the Bruce Nuclear Generating Station constructed in 1987 (IESO, n.d.).

Table 1: Armow Wind Project Timeline (Adapted from Armow Wind, 2015a)

Project Activity	Proposed Date of Completion
Commence Environmental Consultant site visits	August 2011
Project Description Report posted to public	November 2011
Notice of proposal	November 2011
Public information sessions	December 2011
Reports available for public review	September 2012
Public information sessions	November 2012
REA approval	October 2013
Start of construction	Q4 2014
Start of operations	Q4 2015

Fig. 1: Armow Wind Project Location (Armow Wind, 2012).

2.4.2. White Pines Wind Farm

Prince Edward County is home to a number of wind energy projects, the latest installation from Mississauga-based wpd Canada Corporation (wpd) is the White Pines Windfarm (Stantec, 2012a). The White Pines project consists of twenty-nine 2.05 MW turbines, with a total capacity of 59.45 Megawatts (Stantec, 2012a). The total allowable capacity granted under REA regulations is 60 Megawatts (Stantec, 2012a). In addition to the erection of 29 turbines, the project will also include the construction of on-site step-up transformers, a novel electrical power line system, two transformer substations, and a storage area for project equipment (Stantec, 2012a). Table 2 outlines the complete project timeline. Upon project

completion, the installation is expected to produce 169 464 000 kWh of electricity annually (White Pines Windfarm, n.d). According to developer estimates, the wind farm will power 9683 homes in the region (White Pines Windfarm, n.d.) White Pines is deemed a Class 4 wind facility (wpd, 2011).

Table 2: White Pines Wind Project Timeline (Adapted from Stantec, 2012a Table 3.3)

Milestone	Approximate Date
Initiate Public REA Process	March 2011
REA technical studies	Ongoing through to early 2012
Public Open House #1	March 22, 2012
Draft REA Reports to Public	June 2012
Public Open House #2	August 30, 2012
REA Submission	September 2012
REA Approval	Approx. 6 months from Start of Construction
Start of Construction	6-12 months after REA approval
Commercial Operation DATE (COD)	6-9 months from Start of Construction
Repowering/Decommissioning	Approximately 20.5 years after Commercial Operation

The White Pines Windfarm is located in South Marysburg and Athol, within the region of Prince Edward County (White Pines Windfarm, n.d.). The study area is situated within the borders of Brummell Road/Bond Road to the North, Lighthall Road to the West and Gravelly Bay Road to the East (Stantec, 2012a). The project also borders Lake Ontario (Stantec, 2012a). A visual depiction of the project landscape and boundaries is provided in Figure 2. In addition to showcasing the project study area, Figure 2 also provides an approximate location of all twenty-nine turbines to be included in the project. The focus area is privately-owned land, leased to the wind developer from landowners (Stantec, 2012a).

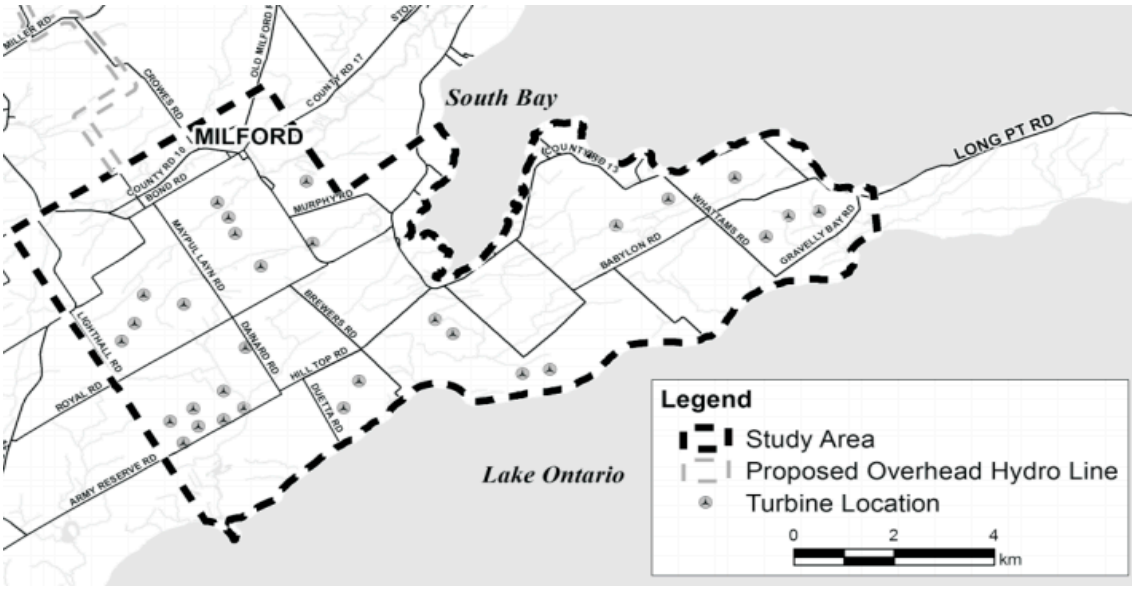

Fig. 2. White Pines Wind Farm location (wpd, 2011)

3.0. Site Selection Criteria

3.1. Community Demographics

The qualitative paradigm dictates that selecting two case studies of equivalent character allows general phenomenon to be identified (Buchecker et al., 2003). Kincardine and Prince Edward County were selected under these pretenses as they share similar demographic characteristics. Both jurisdictions have relatively small population sizes, Kincardine with approximately 11 000 residents (Statistics Canada, 2011b) and Prince Edward County with approximately 25 000 residents (Statistics Canada, 2011a). Prince Edward County wards South Marysburg and Athol, the White Pines Windfarm site, have modest population sizes of 868 and 1215, respectively (PE County, n.d). The demographic composition of both areas consists mainly of Caucasian non-visible minority residents (Statistics Canada, 2011a, 2011b). Furthermore, both jurisdictions are situated in rural areas in close proximity to large water bodies, therefore making them ideally suited for wind farm development.

3.2 Study Area Selection

Ontario is home to sixty-nine wind installations province-wide, and boasts over 3500

megawatts of installed capacity (CanWEA, n.d.). Given the number of wind farms that would fit the parameters of this study, careful consideration was made during study area selection. In addition to the demographic similarities outlined in Section 3.1, both jurisdictions were specifically targeted because they fit important study selection criteria – community resistance, stage of project development, and prevalence of other turbine installations in the area.

When researching potential study locations, I contacted representatives of local wind resistance organizations, visited online forums, and searched the news archives of community newspapers in a few locations. Through these actions, I uncovered a palpable wind resistance movement in both Kincardine and Prince Edward County that warranted further exploration.

Upon determining the adequacy of the wind resistance movement, I then examined which stage of project development was underway at each of these aforementioned installations. In both cases, the wind farms were in the construction stage. Because the developments were still underway, the political and social climate of the areas were tumultuous. Residents in both jurisdictions were actively opposing installations, in hope that wind developers and the government alike would hear pleas for project cessation. The ongoing nature of these projects makes for interesting study locations.

Another important consideration was the prevalence of additional renewable energy projects in the region. Armow and White Pines are both constructed in areas with preexisting wind energy installations, which allows wind energy sentiments to be tracked over time. White Pines, a relatively small installation, is also situated in a region with strong wind energy presence. Figure 3 displays the locations of the wind energy installations within the Prince Edward County Region. Likewise, Kincardine is an optimal research location because it provides the opportunity to examine resident's sentiments regarding a novel wind installation as well as an

existing one. A 162 turbine wind farm is operational in the Tiverton – Kincardine area. This installation, the Enbridge Underwood Wind Project, provides an interesting base of

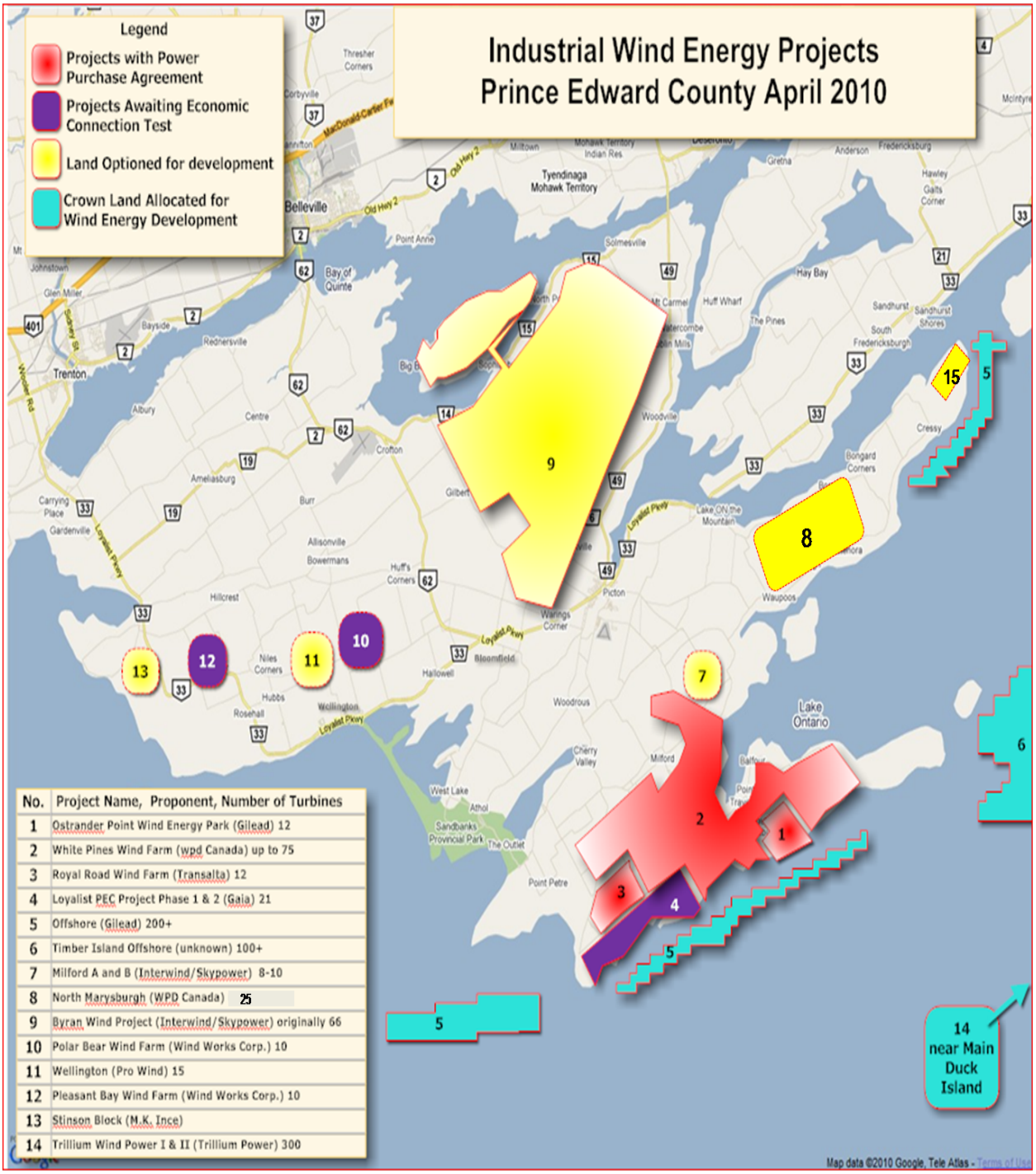

Fig. 3. Map of Wind Farms in Prince Edward County (Wind Power Grab, 2010)

comparison for the Armow Wind project. Additionally, Armow's proximity to the Bruce Nuclear Generating Station facility did not go unnoticed during site selection. After frequent site visits, it was not uncommon to view pro-nuclear signs and bumper stickers on residential vehicles in the community. This added another important parameter to the study, which will be explored in greater detail in Section 6.

4.0.Methodology

4.1. Qualitative Methods: Individual Interviews

Qualitative data collection methods were used in this study. In order to acquire an apt understanding of the public perception of wind energy, in-person interviews with residents of both jurisdictions were conducted. Kincardine residents in close proximity to the Armow Wind Project and Prince Edward County residents located near the White Pines Wind Farm have been interviewed. I selected two locations to discern if residential concerns are location-specific or are shared by a larger portion of the population.

A total of forty-one interviews were conducted. Twenty-one interviews with Kincardine residents and twenty interviews with Prince Edward County residents were completed. The majority of interviews were held in-person. The interviews occurred during three site visits at each location between January and March 2015. Six interviews were held over the phone. Interviews lasted between thirty and fifty minutes.

Interviews took place in homes and businesses in both areas. The majority of interviews were one-on-one, with conversations occurring only between the interview subject and myself. During thirty-one of the interviews I was accompanied by a research assistant who acted as a facilitator. The assistant was mainly responsible for assisting with the selection of candidates (i.e. advertising the study in communal locations), recording the interview sessions using a digital

recording device, and assisting with data transcription. In an attempt to minimize any data biases, the research assistant was not instructed to ask any interview questions or record any field notes.

4.2 Interviewee Selection

4.2.1 Criteria

Interview subjects include homeowners and business-owners in Kincardine and Prince Edward County, Ontario. Interviews with residents in opposition to new wind developments were conducted to identify the leading factors driving resistance. Residents in support of wind projects were interviewed to determine which factors lead to public acceptance.

In addition to residents, I also had informal conversations with municipal councilors and wind developers to chronicle their experiences coordinating public involvement processes and navigating community feedback.

4.2.2. Selection Process

Resident selection was completed randomly. Primary selection techniques included visiting local communal establishments (i.e. coffee shops, stores, family restaurants) and residential homes. At local establishments, I distributed flyers that briefly outlined the purpose of the research and provided my contact information. Many patrons were interested in the research topic and were willing to participate. In a few instances, interviewees referred me to friends, family members, and co-workers who were interested in participating. Ten interviews (four from Prince Edward County and six from Kincardine) were obtained in this manner.

Another successful interview technique involved visiting residential homes. Homes located in the close proximity to the proposed sites (i.e. within a few kilometres) were mainly targeted. A number of residents had lawn signs reflecting their position on the project (See Figures 4 and 5). Lawn-signs acted as an invitation for discussion. In nearly all instances where

lawn signs were present, homeowners were willing to participate in the study and provided detailed accounts of their experiences with wind energy.

Fig. 4. A residential lawn sign in Kincardine, Ontario February 2015.

Fig. 5. A residential lawn-sign in Prince Edward County Ontario, February 2015.

4.3. Interview Questions

Participants were asked a total of twenty-one interview questions (Table 3). The questions were designed to pinpoint the leading inhibitors to wind development and determine residential satisfaction with public involvement. These criteria are crucial in gauging wind energy perceptions and influences. Questions were divided into three sections. Each section was designed to address a specific research goal.

The first set of questions (#1-6 in Table 3) collects interviewee background information (i.e. demographic characteristics). This information allows us to identify patterns in wind attitudes in different segments of the population (i.e. by age, occupation, etc.). Respondent ethnicity was also polled after some interviewees identified as immigrants, and offered information about wind energy in their country of origin.

The second set of questions (#7-16 in Table 3) gauges the effectiveness of the public consultation process in both communities. These questions gather specific details about each session, determine the level of residential involvement in consultation activities, and analyze the degree of residential satisfaction with the overall process.

The final set of questions (#17- 21 in Table 3) address wind energy perceptions. The questions aim to identify principal wind turbine concerns, provincial wind energy viability, and the sources residents use to obtain project information. Identifying how residents obtain project information allows us to pinpoint trusted informational sources, track the spread of misinformation, and determine how specific sources can potentially influence project outlooks.

An observation made in Kincardine led to the inclusion of an additional question (#22). Participants were asked to offer an opinion on nuclear power. In early interviews, many residents regarded the Bruce Power Plant as a viable alternative to wind power in the community. For this

reason I included it into the formal interview questions to determine if these sentiments were shared by the entire sample.

In addition to formal interview questions, in some instances it was more suitable to have informal discussions with residents. This scenario presented itself in situations where participants displayed trepidation with the formal interview process and felt more comfortable discussing their wind energy opinions informally. Three subjects (two in Kincardine and one in Prince Edward County) participated in an informal interview. These individuals were asked to list their greatest concerns with wind energy, determine its viability in Ontario, and rate their experience with the public involvement process. These interview results are included in Section 5.

Table 3: Interview Questions

Background Questions

1. Please tell me about yourself (What is your age? Occupation? Background?)

2. How long have you been a resident of this jurisdiction?

3. Are you aware of the wind farm project? When did you first hear about the project?

4. What were your initial reactions to this proposal?

5. How close is your home or place of work to the wind energy project site?

6. Where do you get most of your information about wind energy? (TV, newspapers, social media, friends etc.)

Public Consultation

7. Have you attended any public consultation meetings for the project? (i.e. an information session, town hall meeting). Please list the meetings you have attended.

8. What mechanisms of public involvement were utilized during each session? (i.e. Did proponents give a formal presentation?) Were they interesting and engaging or tedious and boring?

9. How accessible were the information sessions? Were they held in a suitable location? Were they held during the day or in the evening? Were you given sufficient notice?

10. Were there ample opportunities for you to ask questions and voice any project concerns during the information sessions? Please provide an example.

11. How was your experience with the public involvement sessions overall?

12. If you have not attended a public consultation meeting, explain why not.

13. If you have had a negative public involvement experience, would you consider attending any additional meetings or information sessions in the future?

14. Do you feel like citizen input regarding wind projects is being heard/valued by decision-makers?

15. Would your thoughts on the project change if you were more included in the decision-making process?

16. Have your thoughts on the project changed since you first heard about it?

Wind Energy Concerns

17. What is your single greatest concern about the turbines/ wind farm?

18. Rank these statements from 1-5. (1=Strongly Disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, 5=Strongly Agree)

a) Wind turbines are aesthetically unappealing
b) Wind turbines create noise pollution
c) Wind turbines negatively affect bird populations
d) Wind turbines have adverse environmental impacts
e) Wind turbines negatively affect human health and safety
f) Wind turbines negatively affect property values
g) Wind farms mitigate climate change
h) Wind energy is good for Ontario's economy
i) Wind farms can generate tourism in a region

19. How do you feel about wind energy projects in other areas?

20. Do you think wind energy is a viable alternative energy form for Ontario? Why or why not?

21. Do you think there are other more viable sources of energy for the province? Why or why not?

Optional Question: 22. What are your thoughts on nuclear energy? Is it a better alternative energy form than wind energy?

4.4. Data Collection Methods

Interview Rationale

Data was obtained through individual interviews with residents. Alternative qualitative methods were considered, however, individual interviews were better suited to the nature of the study. I first considered using surveys and focus groups to increase the study sample size. These methods were ruled out to maximize respondent privacy and establish an interview environment devoid of bias and judgment. Individual interviews provide the opportunity for subjects to speak openly about wind energy issues in a comfortable environment. Achieving this result during a focus group session is more difficult because the presence of other individuals could increase subject discomfort. Interviewees are informed of their ability to refuse questions, and this format allows for this.

The individual interview format also extinguishes outside biases and influences that could skew interview results. For example, individuals in a focus group may experience pressure to conform to the opinions of their counterparts. This research study collects the opinions of individuals residing in a relatively small community; therefore there is a possibility that focus groups subjects know each other. This situation could result in residents being ostracized in their community for expressing alternative wind energy opinions. Removing the anonymity of subjects runs the risk of broadcasting personal opinions that are intended to be private.

For an interview to be conducted with accuracy and efficiency, the researcher must carefully guide the discussion to ensure pertinent information is recorded. Guiding a productive discussion can be more difficult during a focus group session, as it is easier to lose control when numerous opinions are being polled and analyzed simultaneously (Morgan and Spanish, 1984). Furthermore, a balanced group dynamic during a session is most conducive to research success;

however, this balance can be easily disrupted if issues are encountered with even a small number of individuals. For example, if an individual refuses to participate in a discussion topic, others could follow suit, which could result in the topic being disregarded.

Furthermore, individual interviews allow the interviewer to pursue lines of questioning more extensively than is possible with other approaches. Morgan and Spanish (1984) indicate that focus groups cannot effectively replace in-depth interviews with subjects. Studies utilizing survey methods are also constrained by this. Surveys can be far-reaching and allow for large sample sizes, however, they collect information on a more superficial level. For these reasons, individual interviews were conducted in Kincardine and Prince Edward County.

Interview Accommodations

Despite my intentions to hold individual interviews exclusively, a small number of interviews were conducted with multiple participants. A few subjects expressed interest in being interviewed with their spouse. I had a few concerns that the opportunity for individual opinions to be expressed would be hindered, however, in the two instances where this occurred, the spouses had divergent opinions. The decision to allow interviews with multiple subjects to occur was made to accommodate the wishes the subjects, establish a comfortable research setting, and increase researcher-subject trust. Both situations produced rich field data.

Data Recording

Primary data collection techniques included field notes and interview voice recordings. During each interview, I catalogued responses using brief point-form notes and recorded the complete interview with an electronic voice transcription device. Prior to research commencement, I conducted a small number of mock interviews to test the effectiveness of the interview questions. Results from these sessions quickly revealed the benefits of using both

handwritten notes and digital recordings. Upon completion of the interview, the voice recordings were transcribed and converted to a digital format. This action amplified organization, simplified response tracking, and facilitated data analysis.

During data transcription and tracking, a system of data collection that protected the anonymity of research subjects was utilized. Each interview respondent was given a unique data label. An individual's location was designated with either a K for Kincardine or a PE for Prince Edward County. An individual's position in community was designated with either R=resident or BO= Business Owner. Each subject was also assigned a number between 1-21. For example the data label PER21 signifies Prince Edward resident number 21, and the data label KBO2 signifies Kincardine business owner number 2.

4.5. Data Analysis Techniques

Data collected from these interviews was analyzed to identify similarities between jurisdictions. Resident responses were amalgamated and examined in Section 5 of this report. Similar responses were grouped together and presented concisely. Additionally, data collected in Question 18 is presented in table format, to clearly display which responses were most common amongst interviewees.

In the few instances where informal interview conversations occurred, participant responses were used to make inferences about the wind energy attitudes in the province. This will be examined in the Discussion section of this report (Section 6). Where applicable, the field data will be compared to existing academic literature related to wind energy NIMBY-ism and public participation in energy planning. Residential concerns and experiences will be recorded to generate a picture of wind resistance in Ontario.

5.0. Results

5.1. Interview Subjects Background Information

Table 4: Kincardine Resident Responses to Questions 1-6

Interviewee	Age	Occupation	Ethnicity	Proximity to Site (km)	Length of Residence (years)	Wind Info Sources
1	18-30	Sales Clerk	Irish	1.5	18	Social Media
2	18-30	Cashier	Canadian	2	22	Social Media
3	65+	Retired	Canadian	2	45	Friend
4	18-30	Cashier	Canadian	4	6	Online News
5	31-64	----------	English	1	8	Friend
6	31-64	----------	English	5	18	Online News
7	65+	Retired	Italian	2	35	Friend
8	65+	Farmer	Italian	2	35	Community Bulletin
9	18-30	Cook	Canadian	2	4	Social Media
10	31-64	Server	Canadian	1.5	27	Social Media
11	65+	Farmer	----------	3	44	Community Bulletin
12	65+	Farmer	----------	3	44	Friend
13	31-64	Farmer	Scottish	5	29	Newspaper
14	31-64	Business Owner	Chinese	5	30	Newspaper
15	65+	Retired	Canadian	4	15	Newspaper
16	65+	Retired	Canadian	4	15	Newspaper
17	31-64	Business Owner	Canadian	2.5	3	Friend
18	18-30	Cashier	Canadian	6	7	Online
19	31-64	Business Owner	Canadian	8	11	TV
20	31-64	Teacher	Irish	7	3	Online
21	31-64	Teacher	----------	7	6	Newspaper

1. Please tell me about yourself (What is your age? Occupation? Background?)

As expressed in Table 4, five residents are between the ages of 18-30, nine residents are between the ages of 31-64 and seven residents are ages 65 and up. These age brackets make up 24%, 43%, and 33% of the sample, respectively.

Subjects between the ages of 18-30 occupied service jobs such as cashiers, servers, or

sales clerks. Occupations for subjects between 31-64 varied more greatly, ranging from business owners to teachers. Interviewees older than age 65 were either retired or farmers.

Subject ethnicity predominately fell under the categories of Canadian, English or Irish. Interviewees were predominately Caucasian, which is consistent with the demographic research presented in section 3.1.

2. How long have you been a resident of this jurisdiction?

According to Table 4, seven individuals have resided in Kincardine for fewer than 10 years, eight individuals have resided there for 11-29 years, and six individuals have resided there for 30+ years.

3. Are you aware of the wind farm project? When did you first hear about the project?

All of the residents polled in this study were aware of the Armow development, and first heard about the proposal in 2011 at the time of the initial project announcement.

4. What were your initial reactions to this proposal?

Sixteen individuals described sentiments of anger, sadness and concern when first learning of the proposal. Of the remaining five individuals, three expressed feelings of indifference towards the project. Only two individuals were excited about the new installation. These feelings were attributed to their support of wind energy in the province. These two individuals regarded the new development as a positive addition to the community.

5. How close is your home or place of work to the wind energy project site?

Study participants reside between 1 and 8 kilometres from the proposed project site. This places residential homes and businesses in very close proximity to the new wind farm installation.

6. Where do you get most of your information about wind energy? (TV, newspapers, social media, friends etc.)

Table 4 displays the correlation between wind energy news sources and resident age. Residents in the 18-30 age bracket were more likely to report social media or online news as primary sources of information. Residents 31-64 were more likely to utilize newspapers, television and online news as primary sources of information. Residents aged 65 and over, exclusively reported that the majority of their information came from friends and TV news.

Table 5: Prince Edward County Resident Responses Questions 1-6

Interviewee	**Age**	**Occupation**	**Ethnicity**	**Proximity to Site (km)**	**Length of Residence (years)**	**Wind Info Sources**
1	65+	Retired	Canadian	10	34	Friend
2	31-64	Nurse	Canadian	11	10	Online
3	31-64	Doctor	Canadian	15	10	Online
4	31-64	Doctor	Canadian	12	8	Online
5	65+	Retired	English	3	25	Community Bulletin
6	65+	Retired	French	1	25	Community Bulletin
7	31-64	Nurse	Indian	1	7	Online
8	65+	Retired	Canadian	7	12	Friend
9	31-64	Accountant	Canadian	2	12	Online
10	65+	Retired	Canadian	3	14	Newspaper
11	65+	Retired	Canadian	2	14	Friend
12	18-30	Retail	Korean	6	8	Social Media
13	65+	Retired	Canadian	4	16	Community Bulletin
14	65+	Retired	Canadian	7	14	Newspaper
15	31-64	Retail	Korean	2	3	Online
16	31-64	Retail	Canadian	3	7	Online
17	18-30	Server	Irish	5	9	Friend
18	65+	Retired	Canadian	20	20	TV
19	65+	Retired	Canadian	20	20	Newspaper
20	18-30	Server	Canadian	6	1	Friend

1. *Please tell me about yourself (What is your age? Occupation? Background?)*

As expressed in Table 5, three residents are between the ages of 18-30, seven residents are between the ages of 31-64, and ten residents are over the age of 65. These numbers represent 15%, 35% and 50% of the sample, respectively.

The occupational profile for the interviewees indicates that 50% of the respondents are retirees. Four individuals identified as medical professionals (i.e. doctors or nurses). Individuals in the 18-30 age bracket reported service industry occupations (i.e. restaurant servers or retail sales associates).

The ethnic profile of the individuals is predominately Canadian, comprising 70% of the sample. Three individuals were immigrants from various European nations including England and Ireland. The remaining three individuals were immigrants from Korea and India.

2. How long have you been a resident of this jurisdiction?

As Table 5 displays, nine interviewees have resided in Prince Edward County for ten years or less, six individuals have lived in the area between 11-20 years, and the remaining five individuals have resided in the county for over 20 years.

3. Are you aware of the wind farm project? When did you first hear about the project?

All twenty participants were aware of the White Pines project prior to the commencement of the interview. Nineteen of these individuals heard about the installation when it was first proposed. The remaining individual heard about the wind farm in 2014, upon moving to the region.

4. What were your initial reactions to this proposal?

"Anti-wind" interviewee subjects expressed feelings of anger, sadness, and shock initially. One individual described the feelings of dismay he experienced when first hearing the news: "there were rumours going around town, something about some land being developed, but I didn't think much about it. One day, I was getting my mail and saw the wpd notice. My heart sank."

Two individuals were eager for the new development. These individuals described White

Pines as a "progressive" move by the province. A handful of interviewees expressed ambivalence towards the installation. These residents stated that the wind farm would not disrupt their daily lives in any major way; therefore they did not find reason to oppose the project.

5. How close is your home or place of work to the wind energy project site?

As presented in Table 5, residents polled in this study reside between 1 and 20 kilometres from the White Pines site. 65% of the respondents reside less than 10 kilometres from the installation. Of this 65%, the majority reside less than 5 kilometres away. The remaining 35% are located greater than 10 kilometres from the site.

6. Where do you get most of your information about wind energy? (TV, newspapers, social media, friends etc.)

Individuals aged 65 and older get their information from TV, newspapers, community bulletins, and friends. Of particular interest is the individuals aged 31-64, who exclusively obtained information and news through online sources (i.e. internet news reports). The remaining respondents in the 18-30 age bracket utilized social media and online sources.

5.2. Social Barriers to Wind Energy in Ontario

5.2.1. Major Barriers Identified by Kincardine Residents

Of the twenty-one respondents, fourteen individuals identified as "anti-wind" and seven individuals identified as "pro-wind." Resident responses highlighting the social barriers to wind in Kincardine will be outlined in this section.

Responses to Questions 17-22

17. What is your single greatest concern about the turbines/ wind farm?

Discussions with the fourteen "anti-wind" residents revealed three major barriers to the acceptance of wind energy projects in Kincardine. Nine respondents listed human health effects

and turbine noise as their primary wind energy concerns. Individuals that selected these grievances attributed adverse health impacts to the noise associated with turbines when they are powered on. These individuals claimed that turbine noise data released by the Ontario government is inaccurate, accusing government agencies of skewing data reports in favour of development. These residents also claimed that exposure to turbine noise for long intervals can lead to chronic sleep deprivation, headaches and other ailments. Interviewees also reported an increased incidence of illnesses in the region since the establishment of other wind projects.

Three respondents selected the impact of wind farms on residential property values as their primary grievance with the project. These individuals are chiefly concerned with how turbines will affect the re-sale value of their homes and farmland in the future. One resident indicated, "my farmland has been in my family for generations. My wife and I recently invested thousands of dollars to refurnish our home. We did this so one-day when we're gone, our kids could sell it and have some income. The turbines are threatening the well being of my family's future. Who's going to pay anything for a house that will make you sick?"

The final two respondents listed aesthetic disruption as their principal concern with the turbines. These individuals are long-time residents of the area and are "deeply saddened" by what the wind farms are doing to the "pristine landscape surrounding Lake Huron." One resident indicated: "I remember 15 years ago, I would be driving home from work, surrounded by beautiful untouched fields. Now, I make that drive and I see turbines for miles and miles, ruining my view."

18. Rank these statements from 1-5. (1=Strongly Disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, 5=Strongly Agree)

a) *Wind turbines are aesthetically unappealing*
b) *Wind turbines create noise pollution*
c) *Wind turbines negatively affect bird populations*

d) Wind turbines have adverse environmental impacts
e) Wind turbines negatively affect human health and safety
f) Wind turbines negatively affect property values
g) Wind farms mitigate climate change
h) Wind energy is good for Ontario's economy
i) Wind farms can generate tourism in a region

Table 6: Kincardine Resident Responses to Question 18 (A-I)

Rank	Question A	Question B	Question C	Question D	Question E	Question F	Question G	Question H	Question I
1	2	1	3	1	1	0	2	1	1
2	3	2	3	2	2	3	4	7	3
3	2	4	10	3	3	3	11	6	8
4	0	2	4	3	1	1	4	3	6
5	14	12	1	12	14	13	0	4	3

The responses to question 18 are listed in Table 6. Each number in the chart represents the number of interviewees who ranked each question. For example, for Question A, eleven interviewees rated the statement a 5, six interviewees rated it a 4, and so on. Questions A-I are various positive and negative statements regarding wind energy. Participants were asked to rank these statements from 1 – 5, depending on their level of agreement or disagreement with the statement.

Question A: Many residents "strongly agree" with the statement "turbines are aesthetically unappealing." This reveals that the majority of residents in this sample find the turbines aesthetically unappealing and are concerned with the visual impacts these structures have on the physical landscape.

Question B: A large number of residents "strongly agree" with the statement that "wind turbines cause noise pollution." These findings are consistent with resident responses to Question 17, which identifies turbine noise as a top concern for Kincardine residents.

Question C: Just under half of the residents "neither agree nor disagree" with the adverse effects of turbines on bird populations. This ambivalence may be the result of insufficient information regarding how turbines affect the species.

Question D: More than half of the respondents agree with the statement "turbines have adverse environmental impacts". When asked to further specify which potential environmental impacts residents were most concerned with, landscape disruption and ecosystem health were among the highest reported.

Question E: The majority of respondents (fourteen out of twenty-one) "strongly agree" with the idea that turbines negatively impact human health and safety. These findings are also consistent with those reported in Question 17.

Question F: A large number of interviewees are concerned with the impact of wind farms on residential property value and re-sale value. Thirteen out of twenty-one individuals "strongly agree" with this statement.

Question G: A little over half of respondents did not agree or disagree with the notion that wind energy can have a mitigating impact on climate change. Only four individuals "agree" with this statement.

Question H: Interviewee responses were fairly distributed across the board. Resident opinions regarding the impact of wind energy on the economy diverged. Responses to Question I were similarly distributed. Residential opinions regarding the effects of wind farms on tourism also varied greatly.

19. How do you feel about wind energy projects in other areas?

Of the fourteen "anti-wind" residents, five revealed that they did not approve of wind energy developments province-wide. These individuals demand the cessation of all current and future wind projects in Ontario. Seven "anti-wind" interviewees stated they would approve wind energy in other areas. The remaining two individuals indicated it was difficult to comment on the happenings of wind development in other municipalities.

20. Do you think wind energy is a viable alternative energy form for Ontario? Why or why not?

All fourteen "anti-wind" interviewees indicated that wind energy was not viable. Primary rationale for this response included: wind's impact on human health, wind's impact on property values, the potential environmental destruction associated with the projects, and the manner through which wind farm development removes citizen power, generating further power imbalances within the region.

The remaining seven "pro-wind" individuals indicated that humans can co-exist harmoniously with wind farms, and the development of these technologies can move our society away from harmful energy sources and mitigate climate change.

21. Do you think there are other more viable sources of energy for the province? Why or why not?

Supporters believe wind-generated electricity could be viable with increased provincial support. Of the seven supporters, five indicated that wind energy, along with other renewable technologies can be incorporated into Ontario's electricity mix to a greater degree. Residents who identified as "anti-wind" labelled nuclear and hydro as viable energy alternatives in Ontario. Nuclear was supported by ten of the fourteen respondents. A few "anti-wind" respondents indicated that fossil fuel energy is "better for the economy" and "has worked for us so far." These individuals also indicated that the economic and social costs of wind energy outweigh any potential environmental benefits.

Optional Question: 22. What are your thoughts on nuclear energy? Is it a better alternative energy form than wind energy?

Kincardine residents were asked this additional question because the region is home to the Bruce Nuclear power plant. In the municipality, residents sported "pro-nuclear" lawn signs and

bumper stickers on their homes and vehicles. “Anti-wind” interviewees were asked to express their thoughts on nuclear energy in comparison to wind energy. Consistent with the responses in Question 21, the majority of these residents were pro-nuclear. Some went so far as to describe nuclear development as “Ontario’s best emission-free energy option.”

5.2.2. Major Barriers Identified by Prince Edward County Residents

Of the twenty residents interviewed, fifteen identified as “anti-wind” and five residents identified as “pro-wind”.

Responses to Questions 17-21

17. What is your single greatest concern about the turbines/ wind farm?

The fifteen “anti-wind” Prince Edward County residents identified the same wind energy concerns as residents in Kincardine. Eight respondents selected the impact of turbines on human health and safety as their primary grievance. These individuals were also wary of the impact of noise on mental health, often describing feelings of annoyance associated with turbine blade rotation. In regards to human health and safety, two interviewees highlighted various phenomenon associated with wind energy technologies - shadow flicker and ice throw. During sunny conditions, turbine blade rotations can cause the flickering of high intensity light (CMOH, 2010). This process is termed shadow flickering, may cause disorientation. Ice throw occurs during the winter months, when ice buildup can expel from turbine blades and be launched to the ground (CMOH, 2010). Resident concerns regarding this phenomenon were also reported during the interviews.

Four “anti-wind” respondents selected property value depreciation as a major wind energy issue. A number of PEC residents own secondary properties used for vacationing in the region. Residents intend to sell these investment properties in the future. With the continuous

development of wind energy in the region, residents are now concerned about the value of these investments.

The three remaining "anti-wind" respondents identified aesthetics as primary turbine grievances. Because PEC is expanding its tourism industry, residential concerns with landscape disruption can be expected.

18. Rank these statements from 1-5. (1=Strongly Disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, 5=Strongly Agree)

a) Wind turbines are aesthetically unappealing
b) Wind turbines create noise pollution
c) Wind turbines negatively affect bird populations
d) Wind turbines have adverse environmental impacts
e) Wind turbines negatively affect human health and safety
f) Wind turbines negatively affect property values
g) Wind farms mitigate climate change
h) Wind energy is good for Ontario's economy
i) Wind farms can generate tourism in a region

Table 7: Prince Edward County Resident Responses to Question 18 (A-I)

Rank	Question A	Question B	Question C	Question D	Question E	Question F	Question G	Question H	Question I
1	1	0	1	1	0	1	2	1	0
2	1	3	6	3	6	2	6	4	2
3	2	3	5	3	0	3	2	10	7
4	4	10	2	10	1	4	4	4	0
5	12	4	6	3	13	10	6	1	11

Table 7 outlines interviewee responses for questions A- I. A total of 20 responses for each question were catalogued.

Question A: The majority of respondents "strongly agree" with the statement that "turbines are aesthetically unappealing." This issue was also highlighted in the responses to Question 17.

Question B: The majority of individuals believe that wind turbines contribute to noise pollution and have other noise impacts. Ten respondents "agreed" with the statement and four

"strongly agreed". When answering this question, interviewees indicated that turbine noise could often lead to feelings of stress and annoyance. One resident described these feelings by saying: "listening to that constant humming noise 24/7 can drive anyone insane."

Question C: Resident responses are split across the board. Eight respondents "strongly agree" or "agree" with the notion that bird populations are adversely affected. On the other side of the spectrum, seven respondents "disagree" or "strongly disagree" with this statement. When asked to further explain their rating selection, some respondents indicated that they did not possess adequate information on the subject, making it difficult to form an opinion.

Question D: Many respondents are concerned with the potential environmental impacts of wind energy on the natural landscape. When asked to highlight which aspects of the environment they were most concerned about, residents offered these responses: ecosystem health, habitat disruption, and the pollution caused by construction activities.

Question E: The majority of residents expressed a degree of concern for human health and safety. This question received the most ratings of 5, revealing that this was among the top concerns for residents.

Resident responses to Question F were also consistent with those reported in Question 17. Most residents are concerned about the negative impacts of wind farms on property values.

Question G: Half of the respondents selected "agree" or "strongly agree" with the statement "wind turbines mitigate climate change". These results are surprising given how adamant the anti-wind supporters are against wind technologies.

Responses to Question H reveal that residents in this sample are unsure of the impact of wind energy on PEC's economy. When asked to provide their rationale, respondents explained they did not possess inadequate information on the subject. One resident offered this opinion:

"I'm not really sure how the economy is going to be affected by the turbines. I don't really trust the government reports saying it will boost our economy and make it prosperous. That's what they want us to believe."

Question I: Most residents "strongly disagreed" with the idea that turbines can generate tourism. Many respondents expressed concern for the future of tourism in the region. "PEC has tried to brand ourselves as a tourist destination. We've worked hard to open up B&Bs and beautify our little town. I'm worried that the turbines are going to take away from all the hard work we've done to put the region on the map."

19. How do you feel about wind energy projects in other areas?

Of the fifteen "anti-wind" residents, ten indicated that they would be more accepting of wind energy projects if they were situated in different regions. "As long as we stop developing them here, in communities that are already saturated, then you won't hear me complaining." Another resident offered an alternative placement option: "can't the government and wind developers get together, find the furthest spot away from humanity, and put them there?" A small-business owner in the region also described his thoughts on wind turbine placement: "I didn't have any problems with turbines or wind in general until I got a notice in the mail that they were coming to my town. Now, I have to worry about if they will be driving away customers from my business."

Only a few residents indicated they would still be unhappy with wind installations, regardless of their setting. "If the Ontario government keeps developing these monstrosities, families like us will be affected, and I can't stand for it."

Two "pro-wind" residents were excited about prospective wind energy projects in other areas. "The things they're doing with the turbines across the world are amazing. Have you seen

how they placed them offshore in Europe? It's really cool."

20. Do you think wind energy is a viable alternative energy form for Ontario? Why or why not?

Eleven interviewees responded "yes" to this statement and the remaining nine selected "no". Interviewees that selected "yes" support wind energy because of its positive impact on climate; however, they do not support turbines in their communities. One respondent explained: "I like the idea of wind energy in theory. If Ontario developed the technology in a way that it didn't hurt anyone, or wasn't too close to people's homes, then I honestly think it could work for Ontario." Another interviewee stated: "Ontario needs to start rethinking our electricity strategy. By now, most people realize that what we're doing isn't working. I think we need to re-adapt our wind energy strategy to make both parties happy. I guarantee if communities didn't feel so bullied by project developers and the government, many more people would be supporters. So yes, I do think it's all possible, we just need to find some middle ground."

Interviewees that question wind's viability list human health concerns, property value uncertainties, and high technical costs as reasons. One respondent explains: "No matter how wonderful the technology is, even if it could clean up the environment like everyone says it can, I still don't think it's right for Ontario for one simple reason – it's making people sick. Case closed." Another resident shared in these sentiments: "as long as wind is being developed, Ontario is going to find itself in a world of trouble. We need to stop developing this and look for something better."

21. Do you think there are other more viable sources of energy for the province? Why or why not?

Fifteen study participants responded "yes" to this question, and five responded "no". The individuals who selected "yes" explained their selection with these reasons: "wind energy only

makes people sick. How can that be viable?" "Nuclear and hydro can carry the province, we don't need to waste time and money developing wind power. Everyone is unhappy with it, so what's the point of causing all these battles with people when there's other stuff out there?"

The individuals who answered "no" described the importance of investing in renewable energy to mitigate climate change, and to minimize Ontario's dependence on nuclear energy. "I don't understand how people can be anti-wind when we have greater threats like nuclear and fossil fuels. Nuclear is a disaster waiting to happen. And fossil fuels are already causing so many problems around the globe." Another individual stated: "I think wind can become more viable as time goes on because researchers can find more ways to increase its efficiency and improve the technology. It's much better than the alternatives."

5.3. Impact of Public Involvement on Wind Energy Perception in Ontario

5.3.1. Experiences from Kincardine Residents

Public Consultation Methods

Project proponents Samsung Renewable Energy and Pattern Energy have enlisted the assistance of a third-party to conduct and evaluate the public consultation practices utilized throughout the project. The developers selected AECOM to fulfill this role (Armow Wind, 2015b). The public consultation methods utilized for the Armow Wind Project will be explored, and community experiences during these project stages will be chronicled.

Open House Meetings

Proponents held two public open house sessions in the municipality in 2011 and 2012. The first open house was held on December 13, 2011 from 4:00 – 8:00 pm at a Best Western in the area (Armow Wind, 2011). The public was informed of the details of this public meeting on November 8, 2011, providing them with a two-month period to make

arrangements to attend the meeting (Armow Wind, 2011). In the interim, the public was provided with contact information for three project developers from Samsung, Pattern Energy and Golder and Associates (Armow Wind, 2011). A notice outlining the public meeting was published online and in local newspapers. The release included a detailed site map, a condensed project description, and information about the proponents.

A second open house meeting was held on November 12, 2012 from 5:30 – 8 pm. (Armow Wind, 2012a). The second session was held at two locations to accommodate additional community stakeholders, and increase opportunities for feedback (Armow Wind, 2012a). The two meetings were held at the Kincardine Best Western as well as the Tiverton Community Centre (Armow Wind, 2012a). In accordance with government mandates, the public notice for this information session was published in local print sources and online, and followed a similar format as the first notice. The notice was released September 12, 2012 (Armow Wind, 2012a). Proponents also utilized this release to notify residents of the status of the REA report that was published to their website (Armow Wind, 2012a).

In addition to two open house meetings, Armow also organized a focused information session on December 11, 2012 (Armow Wind, 2012b). The purpose of this session was to discuss minor changes to the ongoing Noise Impact Assessment Report (Armow Wind 2012b). Formal notices of the session were posted to the appropriate channels, although it was not well attended. News reports indicated that only a handful of residents participated, and the majority of the attendees were either ambivalent or in agreement with the proposed changes (Divinski, 2012). The limited details released at the session likely contributed to low attendance. Residents were also welcomed to drop-in to the project office on December 10th and 11th to ask general questions about the latest noise assessment report (Armow Wind, 2012b). Electronic

copies of the released public notices are available on the Armow website. Notices for the open house sessions, focused information sessions, and office drop-in dates can be viewed there.

Community Liaison Committee

Project proponents established a community liaison committee (CLC) for the Armow Project in 2014 (Armow Wind 2015b). Samsung and Pattern Energy described the purpose of the committee to "discuss the important aspects of construction and operation of the Armow Wind Project. This committee is a requirement of Armow Wind's Renewable Energy Approval (REA) and will serve as a forum to share ideas, express concerns and to provide the community with ongoing updates about the Project" (Armow Wind, 2015b). CLC activities are designed and delivered by AECOM (Armow Wind, 2015b). The CLC is comprised of fourteen community members ranging from Municipal Councilors, local landowners, business-owners and other residents interested in local wind energy issues (AECOM, 2014a). The names and roles of CLC members have been released by AECOM, and can be viewed on the Armow website.

A detailed application describing the committee's mandate, activities, and resident eligibility is available online. Committee selection is completed by AECOM (Armow Wind n.d a). Residents interested in joining must fulfill the following criteria (taken directly from Armow's Website):

- "Knowledge of the community and the issues / concerns / benefits related to wind energy
- Leadership in / or commitment to the community
- Ability to effectively address issues and concerns from a variety of perspectives
- Ability to respectfully participate in community related and consensus-based discussions
- Interest in working productively to enable two-way communication between SP Armow and the community

- Ability to work well in a team or on a committee" (Armow Wind, n.d a, para. 6)

Since the committee's establishment in 2014, two CLC meetings have been held on February 4th, 2014 and December 8th, 2014 (AECOM, 2014a, 2014b). A third meeting is scheduled to take place in 2015, although the date has not yet been determined. The CLC meetings are each held at a Best Western in the community, making them easily accessible. Detailed meeting minutes were prepared by AECOM and posted to the Armow Wind website. Attendees of the first meeting included many of the participating committee members, seven members of the Armow team and two facilitators from AECOM (AECOM, 2014a). CLC meetings are open to all members of the community (Armow Wind, 2015b). There is no evidence that public questions can be answered during the meetings, and none of the interviewees had pertinent knowledge on this subject.

The CLC members are provided with project information and are granted the opportunity to discuss community concerns with developers. For example, in the first CLC meeting, committee members were tasked with composing a Frequently Asked Questions list from the community (AECOM, 2014a). These individuals, in a sense, act as representatives for the larger population. A majority of the residents polled in this study were knowledgeable of the CLC's establishment and purpose, but did not participate in these activities directly.

Careful examination of the detailed meeting minutes reveals that CLC meeting topics ranged from project benefits (i.e. economic and environmental), detailed project characteristics, public participation due diligence (i.e. the process of aboriginal public involvement) and the most recent status updates (AECOM, 2014a). A portion of the meeting was also designated to answer "Questions of Clarification" (AECOM, 2014a). These are topics brought forth by committee members that require additional clarity or have not been addressed in other project

updates (AECOM, 2014a). Overall, the information provided in the CLC meetings is detailed, and the committee members seem to work effectively with project developers.

Materials Utilized

The use of visualization techniques during participatory planning processes can encourage public engagement and increase residential input in project planning (Al-Kodmany 1999). Materials such as maps, GIS data, and other visual data can be used to facilitate informational exchanges during these processes. Interviewees were asked to provide specific details regarding the materials utilized during each public involvement session. Interviewees identified an informational board used during the open the house sessions as the primary visual data source. An online version of the public display board is available on the Armow Website. The board contains information on proponent history, the REA schedule, project location information, wind turbine information, the environmental and economic benefits of wind farm development, project components, and construction activities (Armow Wind, n.d. b). The informational board also addresses common wind energy concerns such as REA turbine sound requirements, turbine impact on property values, results of a noise study, human health, species risk evaluations, and cultural heritage implications (Armow Wind, n.d.b)

Interviewees were asked to critique the board and highlight which (if any) of the sections provided information they deemed interesting or useful. Eighteen respondents have seen the board and were able to comment. Because the open house sessions were held a few years ago, the interviewees were shown the online version of the board as a refresher, and were asked for their opinions. I first asked the interviewees to critique the board by memory using their initial reactions. I later showed them the online version, to minimize any potential biases.

When asked to identify sections of the board that were most useful, seventeen out of

eighteen respondents selected the information on human health, noise and property values. This aligns with findings presented in Section 5.2.1., displaying that these are among the top concerns for residents. Interviewees indicated that they were most interested in reading what proponents said about these particular topics to "get answers" about the most troubling aspects of the project. Of the seventeen respondents, thirteen described moderate satisfaction with the quality of information provided in these sections, hoping for greater detail. Four of the seventeen respondents were extremely dissatisfied with the quality of information provided on the boards describing the data as "basic" and "propaganda." Residents were concerned about where health and noise information was coming from. The remaining respondent was most interested in finding out how turbines work and the potential for job creation in the region.

The Armow website is another tool utilized to facilitate dialogue and knowledge exchange between proponents and the public. All project announcements, pertinent documents, and proponent contact information can be accessed here. Seventeen of the interviewees described the website as "comprehensive" and were pleased that the information was well-organized and readily available. Sixteen of the twenty respondents stated that they visited the website regularly. Overall, the website was regarded as a useful tool available to residents.

Interviewee Responses to Questions 7-16

Interview responses to Questions 7-16, which involve public consultation processes, have been recorded and will be outlined below.

7. Have you attended any public consultation meetings for the project? (i.e. an information session, town hall meeting). Please list the meetings you have attended.

Fourteen out of twenty-one respondents attended at least one open house session for the project. Eleven of these respondents attended both open house sessions held in 2011 and 2012. Interviewees were asked to describe the setting of the public meetings to the best of their ability.

Nearly all respondents described the tense atmosphere of the initial open house session hosted in 2011. One resident explained: "people weren't happy. I remember being in that room, almost being able to taste the wave of hostility and concern in the air." These sentiments were shared by thirteen of the fourteen residents polled.

During the first open house session, Councilor Jacqueline Faubert stood up in front of project proponents and decreed: "what's it going to take to get you to leave?" (Schleich, 2011). Residents roared with applause, the majority in agreement with her bold sentiments. Many interviewees recalled this powerful moment. "Even the municipality does not support the turbines. It was nice to hear someone in government standing up for the people, even if the rest of the province wasn't listening." Another resident recounts the experience saying "it almost brought my wife to tears when the Councilor spoke."

8. What mechanisms of public involvement were utilized during each session? (i.e. Did proponents give a formal presentation?) Were they interesting and engaging or tedious and boring?

Reponses to question 8 varied. In some cases, residents were easily able to recall the mechanisms of public consultation used in each session. For example, residents mentioned a formal presentation and information boards in great detail. In other cases, interviewees found it difficult to recall specific details about the room setup, but were able to recall that proponents conducted a formal presentation.

Thirteen interviewees regarded the public consultation practices as boring not interesting and engaging. Some respondents stated that although they had extremely high interest in the subject matter of the meetings, the manner through which they had been delivered was generally "run-of-the-mill." Interviewees described the room setup and presentation as typical to what would be expected in this situation. Only one respondent expressed satisfaction with the manner

in which the public meetings were conducted, indicating that all of his or her concerns were addressed in the meeting.

9. How accessible were the information sessions? Were they held in a suitable location? Were they held during the day or in the evening? Were you given sufficient notice?

Of the fourteen residents that attended an information session, eleven described them as accessible. These respondents indicated that the selected meeting locations were in close proximity to the project site, and were not a far drive for the residents. In many cases, interviewees without access to a vehicle were able to carpool with neighbours. One resident indicates "even if I was stranded, I'd find a way to get there because it was very important to hear what was going on in my community." Eighty-five percent of the interviewees recalled that they were not concerned about how to reach the meetings.

Residents expressed some concern with the timing of the first meeting, which was held from 4:00 pm to 8:00 pm. The early start-time made it difficult for them to make arrangements to leave work early to attend the full meeting. The second meeting was pushed to a later start time, at 5:30 pm, which interviewees indicated was more manageable. A few respondents indicated that they had to cancel prior engagements to attend.

10. Were there ample opportunities for you to ask questions and voice any project concerns during the information sessions? Please provide an example.

"The developers answered some questions, but it was impossible for us to all have our concerns addressed. There were too many issues and not enough people to hear them." One interviewee indicated that he was able to ask a few questions privately once the session was over. Most of the interviewees indicated they achieved more success with Q and A when they visited the project offices, called, or emailed the proponents directly. It was often easier to receive a timely response by utilizing one of these available channels.

11. How was your experience with the public involvement sessions overall?

Of the fourteen attendees, ten were "unimpressed" with the overall public involvement experience offered in the information sessions. One resident recounts, "if the developers hoped to inspire us to accept the project by meeting with us - they failed." Many residents described the experience as a mandated process and not a means to inspire change and meaningful participation. Residents expressed more satisfaction with the availability of project developers by phone and email, and used these channels to voice their opinions.

12. If you have not attended a public consultation meeting, explain why not.

Seven individuals did not participate in any of the public consultation sessions. Five of these individuals chose not to attend because they felt their time would be better suited doing other things, and felt confident any questions they had could be answered through phone or email. The other two individuals chose not to attend because they felt it was "pointless" and that "these meetings aren't going to change anything anyways."

13. If you have had a negative public involvement experience, would you consider attending any additional meetings or information sessions in the future?

The residents that attended the first open house session but decided not to attend the second one indicated they did so because they were just disappointed with the manner through which the session was conducted and did not want to "waste their time" attending the second session. Residents stated they would only attend a future session if it offered more opportunities for community engagement.

14. Do you feel like citizen input regarding wind projects is being heard/valued by decision-makers?

A clear pattern is visible in the responses to this question particularly. Residents nearly unanimously decided that proponents disregard citizen input. These sentiments were illustrated

in these comments:

- "If they listened to us, there wouldn't be any turbines."
- "Nothing we said was taken seriously."
- "If they won't even listen to the municipality, what chance do residents have to make a positive change?"
- "If it was up to them, they would just ignore all our phone calls and emails and continue making money off of our hardships."

Citizens argue that effective consultation would benefit both decision-makers and residents. In order for meaningful participation to occur, residents need to be included in the decision-making process.

15. Would your thoughts on the project change if you were more included in the decision-making process?

Responses to this question were split amongst the polled residents. Twelve residents reported they would be open to amending their project perception if certain concessions were made (i.e. placing fewer turbines in the area, and increasing the distance between turbines and residential dwellings). Most of the residents did agree, however, that having more power in a situation in which they have "felt powerless for years" could only be a positive thing for the overall well-being of the community. One resident indicates "having power in these situations may even change the outcome."

A few respondents found it difficult to respond to this question because they were so far removed from this mindset that they could not conceive altering it, no matter how much power they were given. One resident's words reflect the uncertainty of this situation, "if I felt I had the opportunity to make a change with the project then maybe I would change my mind," after a moment he continued "nope, not even then."

16. Have your thoughts on the project changed since you first heard about it?

This question was particularly important in this area because it has been four years since the initial project announcement in 2011.

Seven residents were initially outraged by the announcement, and actively participated in protest campaigns. Over time, these residents have accepted that the project is moving forward. Some of their initial feelings of anger have subsided over time.

Ten residents stated that their position regarding the turbines, whether positive or negative, has not altered since the announcement. A few of these individuals stated that their position could not be changed.

The remaining four residents were convinced to change their position on wind energy and gained a more positive outlook after attending the meetings and speaking with other community members.

5.3.2. Experiences from Prince Edward County Residents

Public Consultation Methods

Project proponents for the White Pines Wind Farm have hired a third-party consulting firm, Stantec, to organize and conduct public participation processes. Stantec has compiled an extensive consultation report outlining all practices completed in accordance with REA process regulations O. Reg. 359/09 (Stantec, 2012b). Stantec and wpd clearly outline their objectives for public consultation (taken directly from their consultation report):

• "Build and maintain community support and obtain relevant approvals for the Project;

• Ensure that relevant, accurate, and consistent information about the Project is provided to local Aboriginal communities, community members, members of the public, agencies and municipalities, as early as possible;

• Obtain/identify relevant information and local knowledge of local communities, municipalities, and Aboriginal communities;

• Identify potential issues and areas of concern that may arise from the Project;

• Address concerns by providing additional information, clarifying misconceptions, changing Project design, or making commitments, where appropriate in response to input and comments from the public, Aboriginal communities, municipalities, and agencies;

• Promote effective, proactive and responsive communications with the public, Aboriginal communities, municipalities and agencies;

• Resolve issues where possible, in a transparent manner;

• Track and document all communications between the Project Team and interested parties and ensure the information is incorporated into Project planning, to the extent possible and as appropriate; and,

• Demonstrate that wpd is committed to the well-being of the communities within which it works" (Stantec, 2012b, p.2.1).

In addition to outlining these objectives, Stantec indicates that they commenced public involvement mechanisms in the earliest stages of the project (Stantec, 2012b). Their commitment to pre-disclosure was demonstrated as project information and site plans were distributed to the affected parties and Aboriginal communities in a timely manner (Stantec, 2012b).

Initial Project Communication Strategies

Project proponents utilized a multi-pronged information dissemination strategy to announce initial wind farm plans, and inform stakeholders of critical project updates. Following the initial announcement, project notices were published in local newspapers, information

packages were mailed directly to landowners in the vicinity, and a calling initiative was utilized (Stantec, 2012b). Stantec and wpd also participated in interviews for local television and radio shows to discuss project details, conducted formal presentations for Prince Edward County municipal officials, and established a project website that is updated regularly (Stantec 2012b). The proponents have also established a fact sheet initiative that highlights residential concerns and compose a bi-weekly wind news article that is sent to interested parties and the media (Stantec, 2012b).

Public Open Houses

Two public open house sessions were held in the municipality in 2012. The first open house was held on March 22nd, 2012 and the second session was held on August 30th, 2012 (Stantec, 2012a). Both sessions took place at the Prince Edward County Collegiate Institute in Picton (Stantec, 2012c, 2012d). Meeting duration for both events was 2.5 hours from 5:30 pm to 8:00 pm (Stantec, 2012c, 2012d). In the mailed notice, the public was encouraged to drop-in at any point during the meeting, as a formal presentation by proponents was not held (Stantec, 2012c, 2012d). The public was given access to the latest draft of the project description report sixty days prior to the meeting (Stantec, 2012c). Media reports indicate that 290 residents attended the March 22nd meeting (County Live, 2012) and over 250 residents attended the final open house session (Garand, 2012).

To disseminate information regarding project open houses, wpd published meeting notices in local newspapers, and mailed session details to residents in the project vicinity (Stantec, 2012c). Details regarding the first open house session were published in the Picton Gazette and the County Weekly news approximately one month prior to the session date (Stantec, 2012d). Copies of public notices, display boards, and info session information packages

are available on the wpd website.

Wpd and Stantec took an alternative approach to structuring the open house sessions. Proponents stated, "it is important for wpd to choose the format which is most effective in providing the general public an opportunity to receive information regarding the project and have their questions or concerns addressed" (Stantec, 2012c, p.41). Wpd set up informational panels around the room, with eighteen staff members stationed at each panel (Stantec, 2012b). This setup allowed for questions to be answered one-on-one or in small discussion groups (Stantec, 2012b). Figure 6 depicts the diverse room set up. Participating staff members with various specializations were selected to cater to diverse stakeholder concerns (Stantec, 2012b). Staff members were experts on numerous topics including engineering, environmental assessments, natural heritage, and public health, to name a few (Stantec, 2012b). In addition to expert staff, wpd had additional staff members present to deal with administrative concerns and facilitate community feedback (Stantec, 2012b).

Fig 6. The panel set up of the first public consultation meeting (Source: County Live, 2012)

Materials Utilized

Wpd and Stantec utilized an array of materials to facilitate open house sessions. Primary visual tools included display boards and videos. In both sessions, display boards were placed around the room containing information on project details (i.e. site outline, turbine specs, the

REA process, operation plans, benefits to the local economy, etc.) (Stantec, 2012c). The display boards addressed key wind issues including public health and safety, noise, and property values (Stantec, 2012c). Digital versions of the display boards are available on the wpd website.

A project video was also created for the sessions. The presentation video was between 20-30 minutes in length, and was played on a loop during the sessions (Stantec, 2012c). The video's content includes a demonstration on wind turbine placement that outlines the constraints project developers face when identifying turbine sites (Stantec, 2012c).

During each session, proponents provided attendees with feedback forms as a means to encourage community consultation (Stantec, 2012b). Included with these forms were prepaid return envelopes and copies of the informational handouts used during the open houses (Stantec, 2012b).

Responses to Questions 7-16

Interview responses to questions 7-16 have been amalgamated and will be outlined below. Twenty Prince Edward County residents provided responses to the following questions.

7. Have you attended any public consultation meetings for the project? (i.e. an information session, town hall meeting). Please list the meetings you have attended.

Of the twenty interviewees polled, nineteen attended both information sessions held in March and August of 2012. One interviewee decided not to attend either session.

8. What mechanisms of public involvement were utilized during each session? (i.e. Did proponents give a formal presentation?) Were they interesting and engaging or tedious and boring?

Of the nineteen interviewees who attended both sessions, all of them were able to recall the detailed mechanisms utilized in both sessions. Each individual who attended described the one-on-one panel set-up of the room. Fifteen interviewees were pleased with this different participation style. A few of the comments used to describe the meeting were: "the small group

discussion allowed me to get responses to all my questions." "I liked it because I was able to choose which experts I wanted to talk to specifically." The remaining four individuals disliked this presentation style, describing it as "too confusing" "cramped" and "chaotic". One interviewee indicated "I didn't feel like I had the chance to talk to everyone I wanted to talk to because there wasn't enough time to go around the whole room." Another resident said "I would have preferred a normal presentation where all the information was laid out for us, and then a question period." A third interviewee offered this opinion, "the room was a zoo. 200 people were all trying to get answers. I hovered in the corner trying to get my in, but it was tough."

Only eleven individuals were able to recall a video being played in the background. Of these eleven, six interviewees described the video as useful and interesting, the remaining five said it did not present any new information.

Sixteen individuals recalled submitting a community feedback form. They described the form as "run of the mill" or generally what you would expect of a form of this nature. A few interviewees added that they were not sure where results of these forms ended up.

9. How accessible were the information sessions? Were they held inn a suitable location? Were they held during the day or in the evening? Were you given sufficient notice?

All nineteen interviewees agreed the information sessions were accessible. Each interviewee had access to a vehicle, and claimed the meeting location was a short drive from their homes. In regards to session timing, ten interviewees indicated that the drop-in structure of the open house session made it flexible to attend at their leisure. Residents were made aware of open house dates approximately one month prior to the session. All nineteen interviewees indicated that this was sufficient timing to make adequate preparations to attend.

10. Were there ample opportunities for you to ask questions and voice any project concerns

during the information sessions? Please provide an example.

As described in Question 8, respondent satisfaction with the public meetings varied. Fifteen respondents expressed high levels of satisfaction with the one-on-one panel structure. These respondents attributed high levels of satisfaction to the ample question-asking opportunities and the numerous staff members present. The remaining respondents complained that the noisy, crowded and chaotic atmosphere of the meeting inhibited question-asking opportunities.

11. How was your experience with the public involvement sessions overall?

In order to quantify the responses to this question, I asked interviewees to rate their experiences from 1 to 3. 1 describes low levels of satisfaction with the sessions overall, 2 describes moderate levels of satisfaction, and 3 described high levels of satisfaction. Table 8 provides a brief summary of the results.

Table 8: Interviewee Responses to Question 11

Rating	# of Interviewees that selected this rating	Interviewee Comments (Rationale for Rating)
1	4	• Few opportunities for questions • Volume of residents far surpassed the number of people answering questions • Difficult to see the display board information because room was too crowded • Processes seemed tokenistic
2	5	• Ample opportunities for questions, but room was difficult to navigate because of the number of people • Would prefer a formal presentation, but this set up style was still sufficient
3	10	• Room set up was a welcome change • Ample opportunities to ask questions • Staff was friendly and knowledgeable • Diverse technical experts were able to answer many different concerns • Community feedback cards given to attendees

12. If you have not attended a public consultation meeting, explain why not.

One interviewee did not attend either public consultation meeting. Rationale for this individual's decision not to attend is two-fold. The first reason stemmed from an inherent skepticism regarding the usefulness of the public involvement process. The individual explained: "there's no point missing dinner with my family to attend a meeting that's bullsh*t." When asked to elaborate, the individual described his distrust of the system and viewed the meetings as a form of due diligence.

The second reason was due to the popularity of this issue. The individual noted "I don't really have to attend any of the meetings because I will be hearing about what happened for weeks from my neighbours and friends in the community. On top of that, I'm sure the internet will be buzzing with details."

13. If you have had a negative public involvement experience, would you consider attending any additional meetings or information sessions in the future?

The four interviewees who rated the open houses sessions a 1 in Question 11 were polled. Three individuals indicated they would attend a session in the future if proponents altered some of the public involvement processes. They indicated that proponents should retain the panel set up, but offer meetings on multiple evenings to reduce the number of people in the room at a given time. This strategy would allow for more one-on-one time between the public and staff members. Another individual indicated that the public involvement strategies needed to be completely overhauled from top to bottom to allow for greater citizen input in project decisions.

14. Do you feel like citizen input regarding wind projects is being heard/valued by decision-makers?

Of the twenty interviewees, four individuals indicated that proponents did review all community feedback cards and "addressed concerns to the best of their ability." Twelve

interviewees expressed distrust for the processes, citing tokenistic practices. For example, although respondents were pleased that community feedback cards were offered to residents, they questioned how much community input was being taken into consideration during project construction and development. Some residents were concerned that comment cards were only being offered to community members because wpd was "ordered to by the government" and "not because they care about what we say." The four remaining individuals chose not to provide a response to this question.

15. Would your thoughts on the project change if you were more included in the decision-making process?

Thirteen interviewees indicated that if the process was completely revamped to include community members in decision-making at various project stages, it could lead to greater acceptance of the project. These individuals argued that project development needs to involve compromises between all stakeholders.

The remaining interviewees stated that it is extremely unlikely that anything could alter their project perception. One interviewee stated, "regardless of how many turbines are being put up, if it's one or one hundred, I am still opposed to these bloody machines, because they still keep me up at night."

16. Have your thoughts on the project changed since you first heard about it?

Nine respondents stated their perception of the project remains unchanged since the initial announcement. One resident stated: "they failed to make any changes to the initial project, so my beliefs aren't changing either." Another resident offered: "I haven't seen anything throughout this project that changed my mind. If anything, I'm firmer in my beliefs now than I was when I first heard about it."

The remaining eleven respondents claimed to experience some change in sentiment over

the course of the project. A few credited wpd's transparent communication processes as the source of their change of opinion. "It was really due to wpd answering all my questions thoroughly. All the people I spoke to that work there were really helpful and they've been clear throughout this whole process. That really helped my reconcile with my initial feelings." Others credited these changes to the acquisition of wind energy information stating, "when I first heard about the farm, a lot of misinformation was being spread around the community. I learned a lot about wind energy since then and most of my concerns have been eased over time." A small minority of residents admitted that their reactions only softened over time because they feel "helpless in this situation" and "learned to accept, what couldn't be changed," offering less positive reasons for perception alteration.

6.0. Discussion

6.1. Social Barriers to Wind Energy in Ontario

The most visceral experience people have with electricity is in their homes. Whether it is derived from conventional means or novel renewable installations, electricity is a significant aspect of day-to-day life for Canadians. With the introduction of renewable energy technologies, residential experiences with electricity have dramatically altered in some Ontario municipalities. After discussing wind energy with residents in Kincardine and PEC, a discernable wind resistance movement in both areas can be identified. Although a small sample of individuals was polled during the study (approximately twenty individuals in both areas), "anti-wind" residents discussed not only their own misgivings regarding the technology, but identified these issues as community issues. Local resistance movements have emerged in rural communities affected by wind energy across Ontario.

Participants in both regions have identified four major social barriers to wind energy in

Ontario. They indicate that greater public acceptance of the technologies would be achieved if proponents were able to address the following key issues: mitigate the impact of wind turbines on human health and safety, minimize noise pollution associated with rotating turbine blades, reconcile its effect on residential property values, and diminish any aesthetic disruptions associated with the projects. Secondary concerns identified by residents include potential environmental and economic impacts associated with these projects. These findings are generally consistent with academic literature and provincial media reports.

Human Health & Safety

As outlined in Section 5, residents in both Kincardine and PEC identified human health and safety concerns as their primary grievance with wind energy. Human health concerns include physical illnesses related to sleep deprivation and headaches, as well as mental health and well-being. Participants also discussed the possibility of physical harm associated with turbine "ice throw," a phenomenon discussed in Section 5 of this report.

Interviewees in both regions discussed the greater incidence of health disorders in their communities since the establishment of wind energy technologies. Human health concerns have gained particular momentum in Kincardine, as residents have received the support of local health care practitioners. Grey-Bruce County medical officer Dr. Hazel Lynn, publicly criticized a recent Health Canada study on wind farms and public health (Bernard, 2014). A number of Kincardine interviewees spoke of Dr. Lynn during the interview process, admiring her support of the wind resistance movement in the community. Residents not only admired Dr. Lynn, they also trusted her personal assessment of human health and turbines above all others. Residents were quick to discredit information regarding turbine shadow flicker, ice throw, and other health risks provided by government agencies and proponents. Instead, they turned to the leaders of local

wind resistance movements, and community bulletins for the latest information. PEC residents were also concerned with the impact of turbines on human health, although, these residents did not follow the assessments of local doctors as prominently as in Kincardine. PEC residents also questioned the validity of government issued reports, however, did not put as much emphasis on the opinions of community figures. Instead, these residents identified the need for neutral third-party evaluators to conduct health studies and provide accurate data.

These regional disparities may be the result of demographic differences. Kincardine is smaller in both physical size and population. Community ties are strong and interviewees often spoke of a shared sense of camaraderie and support for their cause. This could explain respondent propensity to trust members of their community over outsiders, as is viewed with the health assessments. The "small-town" feel was not as apparent in the larger and more populated Prince Edward County region. Regardless of this, it is obvious that issues of distrust are prevalent in both areas, and acting as major hindrance to wind.

Noise Concerns

As identified in Section 5, the noise generated by turbine blade rotation is particularly alarming to residents in both jurisdictions. Kincardine residents were more likely to associate noise concerns with adverse human health effects such as sleep deprivation, headaches, and disorientation. Although the impact of noise on human health was important to PEC residents, they were more likely to associate noise concerns with feelings of annoyance and stress when turbine blades rotated for long periods of time. Knopper and Ollson (2011) report that turbines can be a source of annoyance for residents, especially if they exceed the 40-decibel sound limit. Although project proponents maintain that turbine noise does not exceed 40 decibels, PEC residents still reported irritation. These observations in PEC align with these ideas presented in

the Knopper and Ollson (2011) paper.

These regional differences may be the result of divergent local wind resistance movements. In Kincardine, wind resistance movements receive backing from healthcare professionals who highlight noise concerns and human health effects. In contrast, wind resistance movements in PEC highlight alternative issues such as property value and the visual impacts of turbines. For these reasons, Kincardine residents may be more wary of how turbine noise will impact their physical health than their PEC counterparts.

A study conducted by Pedersen and Waye (2004) identified a correlation between visual impact and noise annoyance associated with turbines. In both locations, participants mentioned both noise complaints and aesthetic concerns. Residential grievances in PEC, however, were more consistent with the Pedersen and Waye (2004) findings.

Property Value

Property value is another significant concern in both municipalities. Although this was a prominent issue for homeowners in both regions, differences emerged. PEC residents were more likely to report that properties were purchased as investments, with the intention of being sold sometime in the future. Kincardine residents placed greater sentimental value on the worth of their property. These respondents were more concerned with how long-time family farms would retain their value, and were saddened by the prospect that land that has been in their family for generations would become "worthless" and "degraded." These concerns were coupled with worries regarding their children's future financial security.

These differences are likely attributed to economic differences in both regions. Many PEC interviewees had multiple residences and approached the issue of property value from a purely economic perspective. These residents were not as concerned about the impact of

diminished property value on their livelihood, as they were with any missed opportunities to expand their wealth. Many Kincardine respondents had obtained their homes and farmland from relatives, therefore adding a sentimental attachment to the value of the property. This caused them to regard the issue more personally than their PEC counterparts. Despite these differences, it is unsurprising that property value is of great interest to residents, as economic factors affect quality of life.

Aesthetics

Residents in this study were also concerned with wind's potential visual impacts. Devine-Wright's (2005) analysis of wind energy perception describes visual impacts as "the negative evaluation of the impact of an array of turbines in a specific landscape context" (p. 127). Devine-Wright (2005) also reports that visual and noise concerns are among the most commonly reported in wind energy assessments globally, and some of the most significant factors leading to NIMBY-ism. Brittan (2001) links wind energy resistance to aesthetics, and the public notion that turbines are out of place in scenic natural landscapes.

In this study, PEC residents expressed greater concern for the potential visual impacts of the White Pines Project than their Kincardine counterparts. PEC's official website highlights the natural beauty of the region, advertising its quaint country inns, wineries and beaches. Residents argue that novel wind installations threaten to destroy the pristine landscape of the region. This could detract from PEC's burgeoning tourism industry. This finding aligns with the notions expressed in Brittan's (2001) study. Kincardine residents did not associate turbines with tourism, and instead were more likely to report that aesthetic landscape disruptions caused personal annoyance.

Devine-Wright (2005) also reports that smaller wind farms are better received than larger

developments, because they have less visual impact on the landscape. The White Pines farm is smaller than Armow Wind, however, PEC residents are more wary of the visual impact of wind energy than Kincardine residents.

Environmental Impacts

Bird safety is a common ecological risk associated with wind energy. Interestingly, residents in both areas were unclear about and/or unconcerned with the effects of turbines on migratory birds. Instead, interviewees were more likely to be concerned about habitat fragmentation and ecosystem disruption for other wildlife. These findings are consistent with Wolsink (2000) who discovers that public concerns about bird safety have a secondary impact on wind energy attitudes.

In both areas, construction is taking place on previously untouched landscape. Landscape redevelopment is a principal concern for residents. It is clear, however, that environmental concerns are second to the potential human health impacts associated with the projects. Of all the arguments against wind energy, bird safety has the most substantial scientific support. Given the ferocity with which "anti-wind" participants adamantly discredited wind energy, it was surprising that they did not utilize these facts as primary arguments against the installation. This may be due to the overwhelming concern these participants expressed regarding the health and safety of their own communities.

In contrast, wind supporters were quick to highlight the environmental benefits associated with wind energy, including GHG reductions and climate change mitigation. Some of these residents acknowledged that turbines could be hazardous to bird populations in the region, but viewed these ecological disruptions as "necessary evils." It was not uncommon for "pro-wind" respondents to place greater weight on the emission-free aspect of the technologies and regard

any additional ecological impacts as secondary. These sentiments were expressed by participants in both regions.

Economy & Tourism

In both jurisdictions, residents had insufficient information regarding the impact of wind energy on regional economy. Although developers in both regions presented information on the economic benefits associated with wind farms, residents were wary of the validity of these benefits. It can be noted that most residents were not quick to undermine the possibility of economic prosperity; they were more inclined to simply state that they were unsure of the outcomes. In regards to tourism, concerns with the impact on this industry were greater in PEC, for reasons presented above.

NIMBY-ism & Wind Energy Alternatives

To assess the prevalence of NIMBY-ism in both PEC and Kincardine, respondents were asked to describe their views on wind energy in other regions. Additionally, they were asked to assess the viability of alternative electricity forms. When asked if they supported wind energy projects in other areas, some residents vehemently discredited wind energy installations and declared them unsuitable across the province. This finding suggests that a degree of camaraderie between residents who are adversely affected by wind energy exists. However, many residents in both municipalities stated that they are not strictly opposed to wind installations in other areas. These findings suggest that some degree of NIMBY-ism exists in both PEC and Kincardine. If residents completely disapproved of the implementation of wind in Ontario, they would have adamantly opposed the development of any additional projects regardless of their setting. It is difficult to pinpoint residents' rationale in this situation. Further investigation is required to gauge whether citizens are simply acting in their own interest by wishing the wind energy

burdens on other regions. As outlined in Section 5, one respondent described that he did not have any grievances with wind energy until projects were planned for his community. This comment epitomizes NIMBY-ism.

When asked to assess the viability of wind energy development in Ontario, wind opponents in both regions questioned the technology's feasibility. Residents were concerned that the economic and social costs of wind energy outweighed the environmental benefits. Kincardine residents offered nuclear energy as an alternative to increased wind development, which is unsurprising as the municipality is host to the Bruce Power facility. A discernable pro-nuclear presence existed in the community. These residents were willing to overlook the potential environmental ramifications of continued nuclear development (i.e. inadequate nuclear waste disposal and nuclear disasters) if it would ensure the cessation of wind energy. Some wind supporters in PEC described nuclear energy unfavorably, and highlighted the importance of continued renewable energy development. PEC's wind opponents were content with Ontario's reliance on nuclear, hydro and fossil fuels, further showcasing their distaste for renewables. It can also be noted that no wind opponents listed any additional forms of renewable energy as potential alternatives. Residents in both municipalities displayed path dependency, as described by Etcheverry, O'Malley and Taylor (2009) in Section 2.1 of this report.

Wind Energy Information

Project perception can be greatly impacted by the quality of information available to residents. For these reasons, I asked participants to identify their primary wind energy data sources, essentially, their first "go-to" to learn about the technologies or research project details. Upon completing the interviews, it was apparent that the majority of respondents had conducted a lot of research on the topic of wind energy in Ontario. It was not uncommon for interviewees to

report figures, be aware of specific project details, and provide opinions on contemporary wind energy studies (i.e. health reports, noise studies, and so on). One emergent trend is observable in the data presented in Section 5 (Table 4 and Table 5). A correlation between age and where information is obtained is visible in both jurisdictions. In PEC, residents aged 65 and up, received the majority of their wind energy information from friends/neighbours and community bulletins. Community bulletins are monthly informational pamphlets created by a local wind resistance organization. Of the ten residents in this age bracket who were sampled, nine reported these two sources as their first choice (Table 5). Interestingly, the majority of these residents were not in favour of the White Pines development.

Kincardine residents in this age bracket also identified these sources as their "go-to" for current information. Because this content is developed by local residents and is not derived from official sources, there is virtually no way to quality-check the data. This practice could be perpetuating wind energy misconceptions in the region, especially since wind resistance groups compile the information.

Residents were asked to explain the rationale behind using these informational sources. They viewed these sources as "more reliable" and "truthful" in comparison to the data offered by proponents and the government. These residents made it abundantly clear that the information they received from proponents was falsely representing the turbines. This practice further highlights the distrust between residents and government agencies. It is likely that this strained relationship is contributing to wind energy perception in each region. Minimizing the spread of wind energy misinformation is integral to future development.

Residents in the youngest age bracket (18-30) obtain the majority of their information from social media and online sources. This finding is unsurprising given the recent soar in

popularity of these online platforms. Interviewees identified online sources as news articles, online academic journals, and information from proponent's websites. Although participants in this age cohort represent a small portion of the sample, they were more likely to identify as "pro-wind" or at the very least express more positive sentiments regarding the developments than residents in other age brackets. These patterns may be attributed to a number of reasons. For one, the youngest residents in this sample are not yet homeowners in the region. Instead, they reported to be living at home with their parents or renting, thus making them less likely to be concerned with the impact of the projects on property value. This trend could also speak to the idea that youth are more accepting of renewable technologies, or more open to changes in the electricity mix. To speculate further, additional information is required.

Residents in the middle of the age spectrum (aged 31-64) reported a variety of informational sources. Given the broad age spectrum in this cohort, these findings are unsurprising.

6.2. Impact of Public Involvement on Wind Energy in Ontario

Wind developers, governments, and communities all recognize the essential nature of public involvement in energy planning. The degree to which the public is informed about wind energy projects (Jobert et. al, 2007) and the quality of communication (Krohn and Damborg, 1999) are factors in social acceptance. These positive outcomes can be achieved through meaningful citizen participation. Meaningful participation requires open communication, transparent processes and stakeholder cooperation. When participation is inclusive and equal, it can lead to greater acceptance of wind energy projects (Wright, 2012).

Residents polled in this study described their experiences with public involvement, and assessed their satisfaction with the process overall. Research findings showcase dissatisfaction

and skepticism regarding the quality of the information presented and the value of residential input on project details.

Effectiveness of Public Involvement

Proponents executed a number of participatory processes for both projects. Third-party consulting firms AECOM and Stantec were responsible for designing, implementing, and facilitating public involvement mechanisms for each project. Public information sessions and open houses were the primary mechanisms of public involvement utilized in both regions. In both cases, these meetings acted as the first point of contact between developers and community members. Meeting organization strictly adhered to government-mandated standards of local involvement, as outlined in the REA approval process.

Armow Wind's open house sessions were described as "standard", and included a formal presentation followed by opportunities for questions. Conversely, the White Pines project adopted a diverse approach to open house meetings. They decided to forgo a formal presentation and instead invoke a panel-like design allowing residents to discuss project concerns with numerous technical experts. When asked to rate the effectiveness of these methods, PEC residents displayed greater satisfaction with the panel method than Kincardine residents with the formal presentation. Jackson (2001) describes how overlooked aspects of public involvement sessions, such as room set up, can be conducive to meaningful participation and diminish power imbalances. In her study of public involvement in British Columbia, Jackson (2001) describes how traditional open house room setups (i.e. formal presentations where proponents stand on a stage and residents stand at the back of the room with a microphone) can perpetuate power imbalances between both groups. Many PEC residents valued the diverse setup of the open houses, because it provided them with an opportunity to ask questions to multiple project experts

and members of staff. This strategy eased some residential concerns, and displays proponent willingness to diverge from traditional public consultation activities. This action illustrates that wpd and Stantec discussed strategies that would facilitate communication between stakeholders and foster more productive and meaningful interactions. This is displayed in their decision to use an extensive multi-pronged information dissemination strategy. Residential satisfaction with these organizational changes exhibits the positive impact implementing nontraditional participation can have on a project planning.

Although Armow Wind's open house sessions followed a more traditional setup, proponents utilized another engagement method to encourage public involvement. Samsung and Pattern established a community liaison committee and provided considerably transparent processes when documenting meeting occurrences. CLC facilitators took the time to explain aspects of the project (i.e. turbine function and construction) to committee members. Despite the good intentions behind the CLC committee's establishment, it is unclear how effectively the information acquired during meeting discussions is dispersed throughout the community. The ineffective dissemination of accurate information is a consistent theme that has emerged throughout the study. The detailed information provided during the CLC meeting has not reached the residents polled in this study. If alternative methods of knowledge dispersal among the community members occurred, it could have considerable impact on regional public attitudes regarding the project. This issue speaks to the distrust of government or proponent-generated information discussed in Section 6.1. Additionally, the process through which the CLC members are selected lacks transparency. Residents interested in applying are required to electronically submit an application form, which is later reviewed by AECOM. There is no clarity as to how members are selected, which some residents were concerned with.

In terms of communication processes, project websites were another mechanism used to relay pertinent project information. In both jurisdictions, residents were satisfied with the level of detail and breadth of information included on project websites. These materials were used effectively.

Many interviewees did not regard the public consultation process as a means to achieve their end goals or encourage a discussion between wind developers and the community. Some residents decided not to engage in the public consultation activities being offered. Many were vaguely aware that information sessions were being held, but were reluctant to participate because they felt "it would be a waste of time." Others regarded the public information sessions as obligatory activities held by project developers to fulfill government-imposed mandates. One resident took offence to the wording utilized in the public notices. This individual pointed out that every time project information is released in the form of a public notice, the proponent indicates that this disclosure is in accordance with legally imposed regulations. Viewing participation activities in this manner further displays residential dissatisfaction with public consultation.

Decision-Making & Community Power

Public involvement is an integral but often inadequate aspect of the wind energy development process. One of the primary inadequacies reported is limited citizen decision-making power. Arnstein (1969) makes an important distinction between participation and nonparticipation, that "there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process (p. 2). Some residents regarded participatory processes as tokenistic, because they did not lead to quantifiable project changes or concessions made on behalf of wind developers.

Residents in this study desire equitable power distribution between parties. These inequalities persistently appeared from project start to cessation. Including citizens so late in the process limits their ability to contribute to project planning and stifles decision-making power (Rod, 2011). In both PEC and Kincardine, residents are included in the process after the project proposal has already been submitted. This practice makes it difficult for any ideas or opinions offered by residents during open house sessions to be integrated. In PEC, residents that attended consultation sessions were asked to fill out a community feedback form. Respondents argued that these forms were provided too late in the process to incite real change. If proponents distributed these forms when they mailed out initial project notices, this action could have been perceived as a gesture of goodwill and would have displayed proponent willingness to listen to residential grievances. Positive participation outcomes can be easily achieved with changes to system, but they require commitments from all major actors.

Resident responses to Question 15 display the correlation between project acceptance and community participation. Many residents in Kincardine were open to amending their project outlook if specific concessions were made. Results were even more encouraging in PEC, where the majority of respondents stated they would view the project more favorably if they were more involved with its outcome. These results are surprising given how fiercely wind opponents argued against the project. This research outcome displays hope for the future of meaningful participation in the province.

Project Perception over Time

Respondents were asked to describe if their project perception had altered since first learning about the wind installation. In many cases, resident outlooks remained the same. Approximately half of the sample reported this outcome in both Kincardine and PEC. In

Kincardine, only a few residents reported drastic alterations in their project perception, while the remainder indicated that they have grown complacent in the matter. In PEC however, a greater number of respondents described that their perspective has changed to some degree. PEC residents reported greater levels of satisfaction with open house sessions, which could explain the shift in project perception. These research findings provide some evidence that public attitudes towards wind energy can shift over time. It is unclear as to how much time must pass before wind turbines become accepted landscape fixtures, but these findings hint that such an occurrence is a possibility for Ontario. Wind turbines may follow the path of hydro towers, which were initially met with similar community resistance, but have now become more widely accepted.

6.3. Challenges and Limitations of the Study

Despite efforts to minimize research biases and issues, a few challenges and limitations emerged throughout the compilation of this major paper. Major limitations include the absence of long-term data, limited sample size, and issues with interview subjects. These issues and mitigation strategies will be outlined below.

Long Term Data

One limitation of this study is the absence of long-term data. Because both wind installations are under construction, the study only provides a snapshot of public attitudes at the initial stages of development. This inhibits my ability to reflect on changes in perception over time. In an attempt to overcome this limitation, I visited preexisting wind farms in each region and discussed wind energy issues with local residents. Residents had been living near functional turbines for 5-8 years. Some of the residents I spoke with were still extremely angry about the turbines. A few however, indicated that they had grown to accept the structures as part of their

community's landscape. I conducted a similar practice in PEC, speaking with residents who lived near established wind farms. Although this sample is small, the attitudes in PEC seemed to have changed more positively over time.

Limited Sample Size

Sample size limitations should also be noted. Given time and resource constraints, a decision was made to sample only forty residents (twenty in each region). When initially designing the study, I considered using surveys to obtain more responses, but decided to proceed with individual interviews to acquire more in-depth information. Although this sample size may make it difficult to make inferences about the entire community, the quality of information obtained during the field interviews was significant.

Interview Issues

Interview subjects were generally cooperative and participated enthusiastically. However, I encountered some issues arranging interviews with government officials. Councilors repeatedly refused my interview requests, citing the controversial nature of this topic and schedule constraints as reasons for not wanting to be interviewed. Although I was unable to conduct official interviews, many were willing to discuss the topic informally. These informal conversations provided a fuller picture of the government-community tensions, and substantially contributed to my understanding of social wind energy issues.

7.0. Conclusions

7.1. Summary of Results

Wind energy planning requires a careful balance of competing public, private sector, and government interests. Although wind energy can be a driving force in climate change mitigation, numerous socially derived impediments hinder maximum expansion. Residents in two Ontario

communities identify issues such as human health, property value, turbine noise, tourism, and environmental degradation as top wind energy concerns. Research findings suggest that encouraging meaningful participation in energy planning can alleviate these public grievances and positively impact project acceptance. Public involvement strategies must be re-evaluated to reconcile community-proponent tensions and maximize resident decision-making power. Some residents in Kincardine and Prince Edward County are willing to re-evaluate their stance on wind energy projects with more active engagement in planning. These findings display the correlation between public involvement and project perception.

These research findings also demonstrate how strained relationships between local communities and the provincial government can impact wind development. An inherent distrust of the provincial government and project planners exists in both study locations. This distrust leads to public unwillingness to accept government-issued wind energy information, shapes wind energy attitudes, and perpetuates misconceptions. Ontario residents cannot be expected to adequately assess the feasibility of wind technologies without accurate information. How can wind energy proponents ensure that accurate information is being disseminated if public distrust of their government is so great? Substantive measures must be employed to bridge these divisions between stakeholders and resolve wind energy misconceptions. Minimizing false information can considerably impact renewable energy development, and potentially lead to its expansion throughout the province.

The Ontario government must take action to support the needs of affected communities. Transparent development processes and open communication between both parties is vital to the success of wind energy. Although the residents polled in this investigation represent a small sample of the population, their concerns with wind energy and public involvement processes can

be addressed through communication and cooperation. Although research findings display evidence of NIMBY-ism in the province, effective participation can diminish the popularity of wind energy resistance movements.

7.2. Relevance of Research Findings for Future Applications

The findings presented in this study can positively impact wind energy development in the following ways:

- The study identifies public involvement "best practices" which can be integrated into future projects. Best practices can inspire meaningful participation, increase public satisfaction, lessen the public-private divide, and establish a forum for residential concerns.
- The study contributes to the understanding of socially-derived wind energy issues in Ontario. Outlining these points of contention can inspire the development of wind energy policies to overcome social barriers.
- Because it illustrates issues with traditional wind farm setups, the study makes a case for alternative forms of renewable energy development such as community power. Renewable energy cooperatives operate under a model of shared ownership. Local residents are able to invest in technologies and reap in accrued financial benefits. Since community satisfaction with traditional wind farms is relatively low, investments in community power can lead to the greater acceptance of wind energy.

This research contributes to the understanding of wind energy issues in Ontario, and highlights the relevance of public participation in energy planning. Research findings can inspire policy reform in the wind energy sector. Identifying the major social barriers to wind energy can lead to the development of policies that address public issues.

7.3. Final Thoughts

The strained relationship between the public and Ontario's provincial government commenced with the implementation of the Green Energy Act in 2009, and is exacerbated by the municipal-provincial wind energy divide. Residents in Kincardine and Prince Edward County admire the support of municipal officials who openly oppose wind energy. However, communities are using municipal backing to undermine the provincial government's stance on renewable energy. These tensions are negatively impacting the acceptance of wind energy in the province. Reconciling this division between provincial and municipal governments could also reestablish resident-government trust. Reestablished trust and transparent stakeholder communication, stops the spread of wind energy misinformation in rural communities. Ensuring that residents receive accurate information could positively impact wind project perception.

Ontario's investment in green energy can minimize fossil fuel and nuclear dependency, and contribute to future sustainability. Despite the environmental benefits associated with renewable energy, public resistance to new technologies is a significant issue in the province. Consumers exhibit path dependency, favouring the short-term benefits of fossil fuels and nuclear energy, over the long-term environmental consequences. Ontario can minimize renewable energy resistance by establishing energy policies that address residential concerns and encourage meaningful public participation. Although this research displays how deeply rooted wind energy grievances are in the province, identifying high priority concerns and meaningful strategies to address these concerns, encourages wind energy discussion and establishes a starting point for change.

8.0. References

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Appendix

Human Participant Research Certificate

PANEL ON RESEARCH ETHICS

Navigating the ethics of human research

TCPS 2: CORE

Certificate of Completion

This document certifies that

Alexandria Piccirilli

has completed the Tri-Council Policy Statement:
Ethical Conduct for Research Involving Humans
Course on Research Ethics (TCPS 2: CORE)

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